Indicators of Sustainable Development in Higher Education Institutions: A Case Study of Concordia University

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A Thesis

In the Department

of

Geography, Planning and Environment

Presented in Partial Fulfillment of the Requirements

For the Degree of

Masters of Science (Geography, Urban and Environmental Studies) at

Concordia University

Montréal, Québec Canada

May 2015

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CONCORDIA UNIVERSITY

School of Graduate Studies

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Entitled: Indicators of Sustainable Development in Higher Education Institutions

and submitted in partial fulfillment of the requirements for the degree of

Masters of Science (Geography, Urban and Environmental Studies)

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ABSTRACT

Indicators of Sustainable Development in Higher Education Institutions

Daniel J. Kielback

The concept of "sustainability" is at the forefront of many research concerns and is at an increasing rate being incorporated into the activities of post-secondary institutions. Sustainability has become such an important issue that it has become part of the "marketing" of an institution. Sustainability self-assessment tools have been developed to guide sustainable developments and allow institutions to display their performances across a range of sustainability measures. Given the growing use of these indices among institutions of higher education, this thesis investigates to what extent "sustainability" practices are adopted in a university-wide setting, and how conscious university administrators are that such practices may translate into higher enrolments; or, serve to attract those prospective students seeking a more "green" learning environment.

Using Concordia University as an example, this case study asks a sample of university administrators how sustainability in higher education impacts the university's reputation, prestige, and rank, and then examines how Concordia University plans to pursue sustainable development. The research reported here shows that about 54% of Concordia's research centres and 61% of Senate-recognized centres have a sustainable research focus. Interestingly, all of Concordia's "sustainability-centric" research centres have been developed since 2009. From 2012 to 2014, 80% of the main advertisement campaign focused on sustainable research developments. In terms of the future, results of this research show that the university is mapping its student activities and sustainable assets for more effective developments, while continuing to improve its position in its sustainability self-assessment, and its attempt to create a sustainable minded culture. It is clear from this research, the thesis concludes, that Concordia University definitely believes investing in its sustainability will empower its mission and vision, and is pursuing it through unique ways.

Dedications

I would like to thank everyone at Concordia University who helped to make this project a reality. Dr. Alan Nash for allowing me to take my time to discover my passion, Dr. Satoshi Ikeda, Dr. Pierre Deslauriers, and Dr. Peter Stoett for sitting on my committee and acting as great judges for my defense. To all the administrative staff who took time to sit with me: Andrew Woodall, Dr. Pietro Gasparrini, Philippe Beauregarde, Sami Antaki, Vice-President Bram Freedman, Vice President Roger Côté, and Dr. Peter Stoett.

Special thanks to my parents Dennis and Marie Kielback who pushed me to pursue post-secondary education. I know now of its importance in society. To my partner Mariam Masud for helping me to identify my research area and for supporting me while I completed this project.

The university should consciously shape itself as a model of planetary sustainability

–M'Gonigle and Justine Starke

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Abbreiviations

Academic Manager ……..……(AM)
Co-chair of education in sustainability…… …….(CCES)
Chief Communications Officer……...(CCO)
Director of Environmental Health and Safety……..(DEHS)
Dean of Students…….(DOS)
Executive Director of University Communications Services……...(DUCS)
Education in Sustainable Development……...(ESD)
Environmentally focused Social Economy Enterprises…….(ESEE)
Green Economy…….(GE)
Gross Domestic Product…….(GDP)
Higher Education……..…….(HE)
Higher Education Institutions……...……(HEI)
Knowledge Economy…….....(KE)
Research and Development……... (R&D)
Social-Ecological System……...…...(SES)
Social Economy……..……(SE)
Social Economy Organizations……(SEO)
Sustainable Development……...(SD)
Sustainable Governance Framework……...(SGF)
Sustainability Tracking and Rating System……(STARS)
Sustainability in Higher Education……..(SHE)
Technological Environmental Innovations……...(TEI)
United Nations…….…….…….(UN)
VP Development and External Relations and Secretary General…….……(VPE-SG)
VP of University Services……...…….(VPS)

Literature Review

Introduction and Research Question

Educational historian Marcus Ford (2002) believes that "the university is a living institution" (p.10): dynamic and highly influential, a place for innovations that has brought humanity to the information age, knowledge economy, and expedited scientific progress. Throughout its development the university has played a major role in globalization (Ruby, 2005), producing knowledge to fortify the agendas of regimes and dominant societal institutions; most recently it serves the interests of corporations, state government, and its own. Higher education (HE) is a highly competitive industry that operates under a corporate model, which has reduced the authenticity of its original ideals - the pursuit for truth, democracy and the common good (Paul, 2005).

The well-being, health, and resilience of an institution (i.e. positionality, income, and ability to maintain its trajectory) is subject to environmental conditions that are guided by its endogenous and exogenous relationships. The functionality and effectiveness of departments, employees, teachers and students are essential aspects of maintaining quality standards within an institution. Governmental and industrial regulations and opportunities determine the degree to which a university can self-regulate and its budgets (i.e. taxation, grants, et cetera). The interactions between higher education institutions (HEI) and external groups or organizations can set its educational precedents and affect its specializations and enrolment rates. These relations and their effects establish a university's ability to profit, maintain successful programs and projects, and facilitate the exploration of frontier research and education. Under Neo-liberalism, these factors among others help to determine the position of HEI within the framework of the international university industry.

Inter-university competition is derived from the pursuit for greater recognition through reputation, prestige and ranks. Ranking systems play a role in determining revenues generated by the institution, its graduates and employees. The diversification and isomorphism of institutions influence the reputation and prestige required to establish a good rank and position in the education world marketplace. The common belief is that provided the proper circumstances universities will develop diversely, through pedagogical differentiation, however homogenization through the mimicry of elite universities is the norm. The types of offer knowledge and skills taught and developed in HEI benefit the economy, and influence their prestige, reputation and rank, and consequently the funding they will receive. The rank of HEI can benefit a nation's status. National development of HE has increased as the creation and privatisation of information defines post-industrial economics. The knowledge economy has become increasingly important in many nations (See Hazelkorn, 2009).

The university and the knowledge economy (KE) are complex adaptive systems. Establishing or indoctrinating new boundaries, components, relationships and connections (Metcalfe, 2009) while changing in similar patterns. The university as one of the most prolific creators of knowledge and human capital. Estimates hold that the KE contributes billions of dollars to national gross domestic product (Brown & Mazzarol, 2009; M'Gonigle & Starke, 2006).

As sustainable development (SD) is increasingly promoted at various scales, HE and the KE are becoming more engaged in the green economy (GE), a capital intensive industry of alternative energy and energy efficiency technologies. For educations based upon sciences, engineering, business, and technical studies these green economy opportunities are becoming more lucrative. For students of the arts, SD may reside more in the facilitation of multi-

disciplinary research (Ruby, 2005), politics, policy, community work, and fostering social economic development. The social economy (SE) offers a local alternative to neoliberal globalization by pursuing an economy based on community interaction and development.

As such, education in sustainable development (ESD) is in demand and lucrative despite the inherent contradictions between its model and that of capitalism (e.g. see Orr 1991). Promoted by the United Nations for over twenty years, many doctrines have attempted to enforce sustainability in higher education (SHE). SHE is providing some HEI opportunities to brand themselves as sustainability specialists. Increasingly sustainability is defining another inter-university competitive strategy, an area in which institutions are homogenizing and diversifying at various functions and levels. As ranking criteria involves more criteria through time, sustainability is becoming more important in educational and institutional practices (Williams 2010).

Offering a greater diversity of education in sustainability development (ESD) and developing a university sustainably may help to boost the traditional missions of HE, provide a competitive advantage for the school, and solidify its role in the burgeoning green and social economies. University rating systems such as the American Association of Sustainability in Higher Education's (AASHE), Sustainability Tracking and Rating System (STARS) may offer a framework to better understand where to focus a school's priorities and how to develop a strategic SD action plan. Within a Canadian context and by focusing my energies upon my *alma mater* I intend to research: *How much does sustainability in higher education and educations in Sustainable development impact prestige, reputation, and rank? Why and how does Concordia University want to pursue SD?*

Neoliberal Globalisation and the Commodification of Education

Universities share one characteristic with compulsive gamblers and exiled royalty: there is never enough money to satisfy their desires.

–Derek Bok

Universities reflect the socio-political context of where they exist in time and space. Presently, higher education (HE) in North America reflects neo-liberal ideologies as governmental protection has been reduced necessitating that most universities and colleges purse greater amounts of private capital investments, thus opening HE into the globalized market-place This transformation has largely changed the traditional missions, goals, and values of universities from those based on providing accessible education to empower people for the public good and to create ethical leaders, to goals that focus on the accumulation of wealth and the augmentation of prestige, reputation and ranking. In general, it is prestige, reputation and rank that most greatly affect the image of these institutions (Levin, 2005; Lewis, 2003; Paul 2005; M'Gonigle & Starke, 2006*;* Slaughter & Rhoades, 2000). The generation of new ideas, knowledge, proofs, laws, policies, techniques, and technologies act to affect the prestige of higher education institutions (HEI) – which can be assessed in ways as various as the age of the institution, its tuition costs, the calibre of its students and teachers, the number of publications per faculty, or the earnings of its alumni. The socio-political actions that affect institutions, how its members act, the opinions of student and alumni, and the general public conception of universities also impact its reputation (Brown & Mazzarol, 2009). Both prestige and reputation influence an institution's rank (Brewster, Gates, & Goldman, 2002). The similarities of these institutions' operations, the internal diversity of program offerings and specialties, as well as how they differ from other institutions are important factors for developmental considerations, which affect proxies that influence ranking (Van Vught, 2008). The more a HEI stands out for positive outputs

in these areas, the more funding the institution will receive (Huisman, Meek, & Wood, 2007; Jablecka, 2012). These outputs are considered part of the knowledge economy, which greatly influences global economic systems. Nations worldwide are investing more than ever to ensure their HEI remain competitive (Yelland, 2010). The wealth and rank of the institution can be examined by its impact on the economies at all scales.

Socio-Economic Scenario

According to scholars, HEI play an integral part in the contemporary global knowledge-based economy (Jableka, 2012). In the current context of the neoliberal global economy, the value associated with HEI has transformed to reflect market goals instead of traditional educational missions (Levin, 2005; Lewis, 2003; Paul 2005; M'Gonigle & Starke, 2006; Slaughter & Rhoades 2000). Incessantly seeking greater amounts of financial capital through commercialization may have compromised the values that sustain people's confidence in academic institutions (Bok 2003, p.x). The literature on the repercussions of this corporatizing change will be reviewed by examining how neoliberal policies affect HEI and operations.

According to John S. Levin (2005), the trend towards the corporatization of HEI began in the mid-1980s with the rise of government sponsored neoliberal agendas. Neoliberalism is described as a "political project for institutional change for higher efficiency and productivity through privatization of public services" (p.12). Delving deeper into the concept, David Harvey (2007), defines neoliberalism as

> a theory of political economic practices proposing that human well-being can best be advanced by the maximization of entrepreneurial freedoms within an institutional framework characterized by private property rights, individual liberty, unencumbered markets, and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices (p.22).

The rise of neoliberal ideology has sponsored the sale of once nationalized services and companies to private companies. The trend has occurred in education as well.

The neoliberalism or privatisation of HE was a response to declining governmental sponsorship that began in the 1970's (Sheila & Slaughter, 2000). However, after World War II, governments noted the contributions of scientists to the war effort, providing reason for greater investments in research, natural science and medicine. As the cold-war continued, the American Congress passed the Bayh-Dole Act in 1980 to stimulate the economy, to allow HEI to own and license patents, and provided incentives that strengthened university-business partnerships (Bok, 2003, p11). After 1980, commercialization became more prevalent, due to "a rapid growth in opportunities to supply education, expert advice, and scientific knowledge in return for handsome sums of money" (Ibid, p.10). By 2000 universities were earning more than one billion dollars annually on patent royalties and licensing (Ibid, p12). Derek Bok (2003), reminds us that the influence of private economy is undeniable. Wealthy donors clearly alter the shape of the institution through the power of their benefactions, as the need for money is a chronic conditions of HEI competing for the best students, faculty and reputations globally (p.6).

In the Canadian context, the 1995 Liberal government established the Canada Health and Social Transfer (CHST); cutting federal subsidies for social services provided by provincial governments (Davidson-Harden and Majhanovich, 2004). The reduction in government funding, is forcing North American students to pay disproportionate amount of the educational bill (Paul, 2005). In Canada, average tuition rates rose from $8,700 in 1990, to $28,000 in 2000 (Davidson-Harden and Majhanovich 2004, p.274). This shift from public to private debt and expenditure is typical of neoliberal policies.

In combination to federal legislation reducing government funding to HEI, several trade

> regimes that Canada has joined are attempting to push the privatisation of the service sector. The North American Free Trade Agreement (NAFTA), Free Trade Area of the Americas (FTAA) and General Agreement on Trades in Services (GATS), all seek to have service economies encompassed by the international trade rules; to "liberalize" trade in education (Davidson-Harden & Majhanovich, 2004, p.277).

These agreements attack government legislature that maintains national educational services as "trade barriers" and could threaten national education systems (Ruby, 2005; Sinclair, 2003). With governmental imposed neoliberal actions, schools must act more independently for self-preservation.

The competition between HEI for capital contributions is commonplace. The push for Canadian colleges and universities into the marketplace from protection of the state exemplifies the situation of HE globally. Derek Bok (2003) believes that the new opportunities for HEI to make money helps alleviate governmental support while making universities more attentive to public needs (p.15). However, does the transformation from state to market, demonstrate a divide from the ideals and values institutions of higher learning are supposed to instil? The capitalist tendencies that are inseparable from current HE has truly changed the operations and values of the institution. Let's examine the difference between the *traditional* and present function of HEI.

Mission, Goal, Values, and Operation

Missions are purposeful long-term objectives that may border the ideal, whereas goals are preferred outcomes for a specified time-period. Institutions that pursue missions are purposeful and qualitatively superior to goal-seekers, a natural hierarchy exists as ideals are to objectives as objectives are to goals (Paul, 2005, p.110-111). The traditional missions of education sought ideals through multiple objectives. To some, the corporatized HEI are objective based, narrow in focus, and inferior in purpose to mission focused institutions. Provided that academic institutions keep profit-seeking within sensible boundaries, a HEI must maintain a clear sense of values to pursue mission with quality and integrity (Bok, 2003, p.6).

The traditional missions of HEI were for the public good, for accessible education and to empower people and communities (M'Gonigle & Starke, 2006). HE maintained responsibility not only to produce skilled workers but well-rounded and ethical future leaders (Levin, 2005; Paul, 2005; Slaughter & Rhoades, 2000). This traditional mission is believed to have been usurped by businesses goals (Levin, 2005; Lewis, 2003; Paul 2005; M'Gonigle & Starke, 2006*;* Slaughter & Rhoades 2000). Slaughter and Rhoades (2000) refer to this paradigm as *academic capitalism,* where HE institutions are exemplars of the neoliberal capitalist enterprise.

Academic capitalism in higher education establishes economic objectives as its purpose. In an increasingly competitive global industry schools compete for students, revenues, and resources, to enhance the ranking of their institutions (Paul, 2005; Van Vught, 2008). Pursuing financial goals are considered necessary. With less federal and provincial funding and opening to global markets, schools have little choice but to compete in the global educational market (Deiaco, Hughes, & McKelvey, 2012). The switch to this 'hard managerialism' has re-contextualized the traditional mission and values of post-secondary education, while reducing its social resilience.

Academic capitalism established major changes in the values of colleges and universities and how they operate. The drive for economic efficiency has restructured HEI management from soft (collegial and consensus based) to hard (contractual and autocratic control) (Levin, 2005, p.13). 'Hard managerialism' involves 'academic managers' (AM)*,* administrators above department heads or directors, whose primary function is to reduce costs and increase revenues (Slaughter & Rhoades, 2000). Reduction of tenured professionals for a larger part-time faculty,

not only saves institutions money, it empowers AM roles[1], and disenfranchises academic faculties from their governance roles (Lerner, 2008). Universities and colleges defend this change, as the "notions of shared governance entrenched in academy, cannot mitigate against the type of speed, planning and execution necessary to adapt to changes in the market-place" (Paul, 2005, 112). As the institutions became more complex through time, business professionals and corporate lawyers began replacing clergymen in high positions because, "they needed trustees who could help them raise money and develop better methods of administration[2]" (Bok, 2003, p.8). Presidents of HEI are now being chosen primarily for their fund raising abilities (Bok, 2003, p.10). The loss of democratic governance of HEI occurred with its neoliberalism and transformation of the values associated with education.

The ideals of traditional HE placed value in expanding education and training opportunities for individuals and the community, and not producing a commodity for the open market (Levin, 2005; Paul, 2005; Slaughter & Rhoades, 2000). In the current capitalist paradigm schools strive to commodify education (Davidson-Harden & Majhanovich, 2004; Green, 2003). As Bok (2003) claimed "[t]he world of commerce and industry affect the curriculum in even striking ways through the jobs it provides and the salaries it offers" (p.6). Students are considered consumers of services provided by HEI. A degree recipient becomes a product to be sold to government and corporate interests, and these institutions become clients who consume the university's or college's product. Education and educated persons become a commodity (Levin, 2005; Lewis, 2003; Ruby, 2005). The value corresponding to an individual's education

[1] "University officials have surely initiated entrepreneurial ventures. But they often have little or nothing to with the efforts of prominent professors to found their own companies, sell their services as teachers to corporations, or allow private companies to market their lectures" (Bok, 2003, p.4).

[2] This occurred long before the current phase of commercialization. At first business oriented trustees attempted to dictate aspects of educational operations, met by protests and hits to institutional reputation, since the 1960's most trustees participate in scholarly judgements, interfering with academic decisions when financial health is at risk, and serve largely out of loyalty to their *alma mater* (Bok, 2003, p.7-8)

reflects both their grade point average (G.P.A) and extra-curricular activity, as well as the rank of the institution attended. In the global marketplace ranking is a fundamentally important aspect of competition between universities.

Ranking: reputation, prestige, diversification, and isomorphism

The globalization of education has increased the mobility of students, teachers, and intellectual property (Ruby, 2005), while increasing the diversity of educational quality standards, which makes international ranking systems important (Jablecka, 2012, p.27). Ranking is associated with the value of human capital produced-by or instilled within an institution. A major aspect of competition for institutional funding depends upon an academy's rank. The Shanghai Jiao Tong University's: Academic Ranking of World Universities (ARWU) and Times Higher Education Ranking (THE) systems are the most acclaimed (See Appendix 1: Global Ranking Metrics). These systems base their judgements on specific criteria that influence the Higher Education Institutions (HEI) rank. Other influential ranking systems include Quality Schools (QS) and various national systems, such as Maclean's in Canada or the Princeton Review in the United States. Rankings reflect an institutions reputation and prestige.

In the global education marketplace there is difficulty in associating true value to an institution. Ranking, reputation and prestige act as somewhat interchangeable notions that interplay with the success of institutions. Brewster, Gates and Goldman (2002), state that reputation and prestige are 'status' values that institutions use to convey educational value, and affect the marginal revenue production of an institution (as cited in Paul 2005). In this instance, "reputation involves transitory aspects of opinions and the experience of prior students, and prestige involves more durable attributes, mainly: student quality, research activity, and sports success" (Paul, 2005, p.113).

Prestige is believed to be more influential in ranking systems than reputation (Brown & Mazzarol, 2009), but a good reputation is still essential for continued investment. Brezis (2012) examines prestige's influence on ranking. The value associated with ranking is supposed to

reflect the quality of human capital produced by an institution. Measuring this form of capital is extremely difficult, so rank is based on proxies that attempt to reflect it. Wage after graduation and R&D are significant proxies. R&D is probably the best proxy because research quality is more reasonably measured by: its impact on other research, how often it is cited, and the prestige of the journal it is published in (p.159). Prestige can be measured through statistics about the outputs produced or the wages of an institution's members. However, prestige is impacted by the image consumers have of particular institutions (Brown & Mazzarol, 2009).

Jablecka (2012) asks whether ranking is a cause or effect of prestige. Stating that, "the vast majority of existing elite universities with high status and prestige consist of those with a long tradition... [of being] leading universities... for tens or hundreds of years" (p.31). Elite HEI offer law and medical doctorates which adds to both the wage after graduation and gifts received by the university, acting to enhance prestige and its resource base. Institutions not offering this education fall under the category of comprehensive institutions. Elite universities maintain high status and prestige due to the aforementioned proxies, but in general they are also the oldest establishments in any given country (Brezis, 2012; Brown & Mazzarol, 2009). The age of an institution adds to its prestige, reputation, and helps it to establish its image and brand name.

Learner (2008) claims that in the "corporate world, the brand 'market value' of the name of the institution matters more than anything else" (p.221). The institutions that are most sought are those that maintain a brand name or establish one. Robert, T. Brown and Timothy William Mazzarol (2009) discovered that image is the "key antecedent for consumer value perception, satisfaction and loyalty, while also demonstrating the relative weakness of service quality" (p.90). Reputation building elements such as student satisfaction and loyalty do not solely reflect the quality of services and the institution's position. Due to the highly competitive nature of HEI

brand building is considered difficult (Chapleo, 2007), but strategic marketing can boost an institutions reputation (See Appendix 2: Model of relationship between image, value, satisfaction and loyalty).

Brown and Mazzarol (2009) emphasize a *market-smart* and *mission-centered* approach to image building and enhancing market position. The goal is to establish a clear brand through strategic marketing campaigns. Marketing of a university should explore

> genuine, institution-wide focus on the characteristics that can form each university's strengths and competitive advantages… focus on activities that support a clear mission, that fulfils the needs within targeted market segment… The mission and marketing campaigns should focus on evaluative, transactional and emotions, which are all important elements in shaping student satisfaction and institutional loyalty (p.91-92).

Strategic marketing of HEI should recognize their strengths and weaknesses. By enhancing strengths and providing educations or opportunities unavailable at other institutions a clear image and brand may develop. Image boosting of transactional, evaluative factors and emotional responses strongly influence student perceptions of satisfaction and institutional loyalty (Ibid, p.91). By becoming widely recognized schools become more attractive, enrolment and admission competition rises, as do the educational costs, investments, reputation and prestige.

More sought after HEI retain an enhanced ability to attract high quality or "star" educators and students (a noteworthy aspect of the Times Higher Education ranking system). To attract high profile teachers, universities offer highly competitive salaries which may require cost reductions in other areas (such as tenured positions and outsourcing services). In an odd circumstance, increasing tuition rates benefits reputation and prestige, acting to attract star students and professors, all of which act to improve ranking (Lerner 2008; Van Vught, 2008).

The elite universities have set the standard for the rest, and although prestige through R&D as a ranking metric is currently considered paramount[3]. While elite universities maintain top international and national ranks, their positions, like all HEI, are to an extent determined by their isomorphic tendencies, and their abilities to differentiate and diversify. Jableka (2012) examines how Higher Education Institutions (HEI) are pressured to homogenize due to the environment in which they operate and pressures to conform to ranking enhancing developments. Isomorphic tendencies or homogenization impacts internal and external diversification. Isomorphism comes in three main forms: forced, mimetic, and normative. Forced isomorphism involves the enforcement of governmental laws, finances, and the accreditation systems. Van Vught (2008) describes mimetic isomorphism as the copying of the successful strategies of other institutions[4]. Normative isomorphism is found in HE policies and professionals due to the intensification of inter-academy connectivity and resource mobility. It implies the acceptance of certain standards, values, models or a culture. The author stipulates that there exists a tendency for differentiation to be impeded by academic professionals (p.164), perhaps a result of maintaining normative isomorphism; this could reduce beneficial changes required for augmenting one's rank, and reduce institutional resilience. For institutions of HE converging or enacting isomorphism's can simplify the nuances of complex relationships while enhancing what is indicative for R&D productivity. Enhancing university ranking requires both

[3] No faculty member feels a stronger sense of the mission to commercialize than the scientists. None has a clearer sense of purpose than the schools of business and medicine… who are most deeply involved in lucrative consulting and entrepreneurial activity (Bok, 2003, p.5-6).

[4] In the case of Concordia University, this tends to be the case regarding developments. Concordia's neighbouring McGill University (one of the oldest HEI in Canada, as well as an institution that provides education in the higher income earning disciplines of medicine and law, sets high standards and precedence for Concordia in many aspects, to what degree it is diversifying is a major question in the research.)

the intensification of research activities and limiting the process of imitation[5] (Jablecka, 2012, p.55) (See Appendix 3: Influences on Diversity and Convergence).

Van Vught (2008) describes the difference between differentiation and diversity. As the former is a dynamic process of establishing new entities in a system, diversity refers to the variation within a static system at any given time (p.152). When discussing HEI, external diversity[6] refers to differences between schools, while internal refers the difference within a given HEI. Codling and Meek (2006) state that diversity occurs between two types of HE institutions, those for mass education and those for specific R&D, and the policies and people that build and maintain individual HE places[7]. Diversity provides a greater ability to confront the intricate social, political, economic and environmental pressures faced by HEI[8].

Reichert (2009) and Van Vught (2008) posit that the diversification of schools is a prerequisite for autonomy and academic freedom which can be largely an effect of state mechanisms. The competitive effectiveness of a university depends upon the conditions set by the national and regional systems in which they developed as well as their role within these systems (Deiaco, 2012). Brezis (2012) found that of the ten highest ranked universities nine are private institutions[9], their quality depends more on the flexibility or autonomy of institutionalized governance than ownership models (p.171). The greater the autonomy of HEI

[5] Also, referred to as 'academic drift'.
[6] Van Vught (2008) mentions 7 classifications for external diversity: systemic, structural, programmatic, procedural (mission), reputational, constituntial (how teaching, research and services are provided), and values and climate (environment and culture) (p.153).
[7] Deiaco, Holme'n, and McKelvey (2009) propose that university competition for resources, prestige and recognition occurs at four levels: by individual actors, in research environments (groups), by departments, and universities as organizations. Two external factors affect the flow of resources, the government sanctioned science and education system, and the global sectorial innovation system.
[8] To meet student needs, allow for social mobility, to meet the needs of the labour market, to serve the political needs of interest groups, provides both elite and mass education, increase the effectiveness of institutions (through institutional specialization), provides opportunities for low-risk experimentation for innovation. (p.154).
[9] For instance the California Institution of Technology is not one of the oldest American universities, (i.e. the Ivy League of the East Coast), but maintains a top ten position in university ranking systems due to its outputs (Brezis, 2012).

from systems that enforce certain regulations can help to increase ranking: by possession of legal personality, self-recruitment, tuition setting, ability to create new programs and curriculum, staff promotion, development, remuneration, promotion, and the freedom over funds, property, land and buildings. When greater levels of autonomy are achieved financial obligations become to a greater extent the responsibility of HEI (Jablecka, 2012, p.30-31).

Levin (2005) describes how with the deregulation of HE more universities and colleges compete for funding designed for particular academic allocations, which can promote differentiation and diversity *vis-a-vis* innovations and new markets that become one's essential edge over competitors. Huisman, Meek, and Wood (2007) state that inter-school competition through diversification can provide greater HE financial diversification. Diversification is believed to be intrinsically beneficial and necessary to promote growth while meeting expectations and peer pressure. Jablecka (2012) discusses how resource scarcity provides opportunity for competition that instills diversity through innovation and new markets for student investment (i.e. interdisciplinary research hubs). Such institutional diversification permits mission and business profile selection, which reduces the risks related to experimentation for innovation, and affects institutional efficiency (p.28).

Differentiation and diversification are important aspects of HEI, permitting excellence in various attributes and specializations, and aiding in the well-being, health and resilience of HEI. The degree to which governments allow autonomy through deregulation may facilitate greater funding opportunities by removing restrictions on various aspects of academic conduct and development. It may be a major factor in governance methods and high ranking as well. Despite the probable perks, Van Vught (2008) shows that around the world the tendency is toward *academic drift* (i.e. homogenization) rather than differentiation. Similarities in most cases

involve the dominance of academic norms and values as impediments even when governments have provided greater autonomy (p.164).

Isomorphism and diversification are highly influential aspects of the reputation and prestige of HEI. An affective balance of these characteristics in relationship to opportunity provided by the state, the age of an institution, academic focuses, and the academic excellence of those within the institution are major factors in the ranking of a HEI. As neoliberalism provides greater reason for the deregulation of education from the state, universities and colleges are competing on the world stage for funding and recognition.

The promotion of capitalism through HEI functions affects the proxies that influence rank. Innovations improve rank. Innovations that produce and/or procure large sums of financial capital influence ranking more. Therefore, specialization and the ability to out-perform all other institutions is a major benefit to rank. This raises the question: what is the relationship between Higher Education (HE) in neoliberalism and what is the affect of HEI on capitalism? The answer involves an examination of the knowledge economy.

Knowledge Economy

Martinez (2010) states that knowledge is the crucial resource of the knowledge economy (KE). Higher education (HE) is a very influential player in the KE. Believed to be a major influencing factor in the competitiveness of developed countries, the KE is routed in the production and distribution of knowledge and information. Powell and Snellman (2004) define the KE as

> production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence. The key components of a knowledge economy include a greater reliance on intellectual capabilities than on physical inputs or natural resources, combined with efforts to integrate improvements in every stage of the production process, from the R&D lab to the factory floor to the interface with customers (p.201).

As disseminating information is the foundation of HE, and producing new knowledge through R&D and patents is a major aspect of its nature, it becomes difficult to deny HE's impact on said economy.

Education is becoming more dependent upon the exploitation and creation of new technologies. Educational technology is already a significant aspect of teaching in both physical and virtual space (Martinez, 2010). It changes the dynamics of inter-institutional and professional collaborations (Ruby, 2005). Technology supports what and how school is taught. The diversity of technological applications in education reflects the diversity of technologies required to teach specific science and technology disciplines. Its advances have increased the interconnectivity and normative isomorphism between HEI, while enhancing internal communicative capacities.

As various "new" technology and science based educational disciplines develop, universities and other HEI will be required to maintain top-of-the-line and experimental tools for the further development of the disciplines and potential applications of the technology/skill-set. Nations with advanced economies are investing more in HE's R&D than before (Hughes & Mina, 2012, p.16). In addition, university patenting has grown much more rapidly than that of private firms, which reflects an increase in innovations that are usually associated with new sectors of the economy (Powell & Snellman, 2004).

However, the knowledge economy (KE) may be influenced by more than just the advance of scientific and technological expertise. According to Deiaco, Hughes, and McKelvey (2012), universities as strategic actors and competitors in the KE play the role of

> provider[s] of public and private goods in education and research, and have established roles as applied problem solvers. Its public space role helps to develop wider societal impacts linked to and co-evolving with the aforementioned roles, and facilitates integration into wider social and innovation system (p.525).

Innovative concepts and designs for interacting with and understanding the world are also important KE factors. A growing argument addresses the importance of creating knowledge that facilitates multi-disciplinary education and research, which is necessary for innovation in large mission-driven challenges (Deiaco, *et al*. 2012; Ruby, 2005; Mosey, Wright & Clarysse, 2012). All outputs of HEI can be considered as contributions to the KE. As such, universities and other HEI are quite influential actors on global processes and the economy at various scales, providing a growth in both public and private sectors.

There is extensive interplay between post-secondary education with systems of government, business and industry at multiple scales; and the global growth of HE enhances the importance of the university's economic position. Van Vught (2008) explains how the KE has been a focus of governmental policy in attempts to stimulate "educational entrepreneurialism" the policies promote collaboration between HEI, businesses and industries. Governments are encouraging institutions to develop unique missions, identities, and specialisations to build a diverse national education system. These efforts are to stimulate the external diversity between HEI to better serve the national marketplace (p.166).

The consensus of the Organization of Economic Co-operation and Development[10] (OECD) is that HE plays a "vital role in driving economic growth and social cohesion. Ensuring the [HE] system is high-quality is central to a nation's ability to participate successfully in the global knowledge economy" (Yelland, 2010, p.584). Similarly, Canada states that learning and for-profit education services are essential for augmenting the population's "skills and knowledge,

[10] The OECD is an international organisation devoted to global development with a particular focus upon its member countries. Originating in 1960 with 18 European countries the US and Canada, it presently contains 34 countries from around the world. Member countries include: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States (OECD, 2013).

productivity, innovation and competitiveness" (Plante, 2005, p.6). As aging populations leave technical positions, it becomes important to replace workers in relevant jobs (i.e. education in vocational college). However, it is more valuable to compete in capitalism creative destruction - innovating to create more effective goods to replace pre-existing systems or industries (Paul, 2005).

Capital generated by the KE may be difficult to measure. Powell and Snellman (2004) state that assets of the knowledge economy are measured by:

> stocks of knowledge— human, organizational, and intellectual capital [such as patents or intellectual property, and by] activities— such as R&D efforts, investments in information and communication technology and in education and training, and organizational reforms (p.202).

Outputs and the quality of these measurements are linked to the ranks of HEI. It is intellectual capital that drives post-industrial societies and the following Canadian statistics reflect this notion. The economic impacts of HE have been assessed at all scales of political organization. At the micro scale, a university is a major employer in cities directly and indirectly. In Montréal the academic community provides about 65,000 jobs (Martin & Benoit, 2004). In 2006, Québec's static annual monetary output was assessed at 670 million dollars, while the fluctuating grand total was 11.9 billion dollars (Dupuis, St-Maurice & Fernand, 2006). At the Federal level, revenues from R&D derived from universities impact society more each year. In 2008, Canadian universities generated 30 billion dollars, employed more than 150,000 people, and conducted approximately 10 billion dollars' worth of R&D (Munroe-Blum, 2010). By 2010, they "contributed 38.2% of Canada's R&D, produced 11.1 billion dollars in research and had a total annual economic impact $60 billion" (AUCC, 2011). This information shows that the educational industry does impact the KE and Gross Domestic Product (GDP); however, there is reasonable doubt attached to these calculations.

Economic impact assessments are established through scientific estimations and on occasion can overestimate the real monetary effects of universities. Impact assessments can be deceiving to the point of extreme exaggerations through: lack of definition of geographic boundaries, what makes the impact, and in describing counterfactual situations, double counting, and through the utilization of inappropriate multipliers (Siegfried, Sanderson, & McHenry, 2007; Wolf, 2010). Higher education impact reports may present their findings through methods that act to enhance economic inputs (i.e. to receive greater investments). Nonetheless, it is undeniable that the influx of university students generates capital at multiple scales.

The significance of the KE reinforces the notion that personal success involves HE, and provokes many individuals to seek it for personal enhancement and marketability; to commodify themselves for job-market (Levin, 2005; Powell & Snellman, 2004). Education, knowledge and their bi-products act as commodities, a source of revenue, and add to a nation's GDP. The growing global demand for education attracts both local and international students to specific schools (Deiaco *et al*., 2012). International students attracted to the reputation and prestige of academies of the global north pay notably higher tuitions. Marketing educations to them becomes a lucrative opportunity in post-industrialized countries[11] (Ruby 2005). To generate more capital mass education in leading countries has increased as has support for universities and scientific research (Hughes & Mina, 2012). The escalation of universities, student diversification, private educational providers, and the diversity of delivery (i.e. education technologies) has increased global competition for capital. To remain prevalent HEI must

[11] Foreign students pay roughly 700% more than Quebec residents and 300% more than Canadian citizens. In 2010-2011, Quebec residents enrolled in a full-time undergraduate degree paid ~$2,068, while Canadians from outside of Quebec paid on average $5,668 annually. In contrast, foreign students pay the rate of Quebec students in combination with a flat fee that ranges from $11,267 to $12,810. For graduate students the fees decrease as the student advances, by the third year of a graduate program they pay $9,916 in addition to the Quebec resident rate (The Canadian Information Centre for International Credentials, 2010).

continuously examine the content of research and learning to remain competitive (Ruby 2005*),* and provide educational services that are considered valuable to the market economy, such as new organizational forms for interacting and creating knowledge (Deiaco et. al., 2012).

The favoured disciplines involved in science, technology and business will continue to be supported by the neoliberal university, but what of the traditional missions, using education to solve societal inequities, and the pursuit of truth through liberal arts education? Howard Garner (2004) emphasises competencies or skills in facilitating interdisciplinary work. Interdisciplinary working is essential to bridge the intellectual and human capitals created by schools (as cited in Ruby, 2005). Deiaco *et al*. (2012) describes that universities have more pressure to secure resources, be accountable to their stakeholders and generate impacts as they reach new levels of economic growth in the KE. The demands make interdisciplinary and mission driven modes of working necessary (p.526).

> The increased cost or complexity of the knowledge required for innovation may increase the search for external knowledge by businesses, or the pressing nature of government concerns to tackle global challenges ranging from climate change to food security may prioritise interdisciplinarity (Ibid, p.538).

Diversification through multidisciplinary research may re-establish some traditional missions, and establish innovations that affect ranking. It is hypothesized, that the metrics of 'success' might include new multidisciplinary modules delivered within conventional school structures (Mosey, Wright & Clarysse, 2012). However, as Velazquez, Munguia, and Sanchez (2005) state "[s]timulating the interdisciplinary research activities has been one of the most difficult tasks in universities" (p.387).

As the KE is intricately linked with discoveries, many derived from HE, new ways of disseminating and developing knowledge are becoming entrenched in education. New techniques, technologies, interdisciplinary and multidisciplinary research are becoming

commonplace. The KE is intrinsically connected to HE and is a significant global influence and economic stimulant. As the neoliberal system is precariously balanced, with environmental, social, and economic crises a constant threat sustainability and sustainable development (SD) are increasingly becoming a major focus at HEI.

The What and Why of Sustainability

Sustainable development, the new political concept that includes equity and justice, within and between generations.

– Dr. Gro Harlem Brundtland, 2007

Global concerns over the future conditions of the planet due to anthropogenic pollution, the over-extraction and destruction of natural resources, and resulting climate changes have brought the concept of sustainability and sustainable development to the forefront of much social and political debate. In this thesis, sustainability is defined as the preservation or improvement of systems. This depends on a system's ability to rebound from stresses and changes – to be resilient and flexible –to maintain the capacity to adapt. While sustainable development is usually defined as the balance of social, economic and environmental considerations in all actions, the general lack of meeting this triple bottom line, coupled with the concept of weak sustainability (where all forms of capital are equal and interchangeable) (Daly, 2005; Roseland, 2005), have led to a preference for sustainable development to be defined as the conservation of natural resources in this thesis. Here sustainable development attempts to maintain environmental conditions before considering social and economic concerns.

Understanding the fluctuations of ecosystems, and humanity's relationship with them as a consequence of resource exploitation/management, defines our knowledge of environmental sustainability. Ecological resilience is an essential component of strong sustainability. Social ecological systems (SES) are those that involve the complexities of the interactions between

human and natural systems (Folke et.al, 2005). SES through time and space are considered panarchy (See Appendix 4: Panarchy), where resilience is an essential component for sustainability (Holling, 2001).

Societies and economies depend upon the vitality of the natural environment. Weak sustainability adopted by neoclassical economics may co-exist with or could be replaced by an economy focused on conservation and resilience. Humanity must address environmental disequilibrium. Natural resources are over-exploited in the extraction phase; the manufacturing of goods and energy has created an over-abundance of waste products and pollution that exceed the Earth's absorption capacity (Daly, 2005; Rees & Wackernagel, 2013). Development can proceed but growth should decrease. Economic measurement tools neglect to take into consideration this disequilibrium. GDP, utility or "satisfaction of wants", throughput of natural capital, I=PAT12 and the ecological footprint are measurement tools that together question the benefits of neoclassical economics, and re-imagine how economies could be measured, and why they should be.

Defining Sustainability

Sustainability is a complex notion that has hundreds of definitions. In essence, it means to maintain. Sustainable is "that which can be maintained over time" (Heinberg, 2010, p.1). Sustainability is not at all a new paradigm. The cultures of traditional peoples throughout the world mandated intergenerational conservation of ecological assets through livelihood and practices[13] (Heinberg, 2010; Kuhlman & Harrington, 2010). The Western concept is derived from a Latin term, it was first used in the micro or personal context, and was later utilized in resource management scenarios. In contemporary rhetoric of global policy, politics and neoclassical

[12] Environmental impact (I) is caused by population (P), affluence (A), and technology (T). I=PAT.
[13] A precept of the Iroquois Confederacy's Gayanashagowa, or Great Law of Peace, where chiefs consider the impact of their decisions on the seventh generation to come (Heinberg, 2010).

economics its meaning refers to maintaining Earth's life supporting systems in order for humans to persist, to ensure the quality/conditions for life (i.e. sustained or improved welfare) (Sutton, 2004). The term is commonly attached to development. In this instance intergenerational responsibility and justice are considered paramount (Daly, 2005) as present actions ensure that future generations receive equal or improved livelihoods.

The term gained utility in the macro context by the late 20th century with the development of the environmental movement[14], and by the 1980's was associated with international development (Sutton, 2004, p.4). The UN is a major proponent of sustainable development (SD), inciting nations to affect socio-political and economic expansion in sustainable ways. The International Union for Conservation of Nature and Natural Resources released the World Conservation Strategy in 1980. Development was defined as modification of the biosphere and application of resources to improve the quality of human life. SD takes "account of social and ecological factors, as well as economic ones; of the living and non-living resource base" while taking into consideration the advantages and disadvantages of such action through time. (IUCN, 1980, p.1). Interestingly, the definition of conservation in this article later becomes the most cited definition of SD.

In 1987, the World Commission on Environment and Development's (WCED) report *Our Common Future* defined SD. Its definition is an intergenerational concept: the ability of the present generation to maintain the vitality of various earthly systems to ensure that future generations may experience a life of equal quality or succinctly as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). SD as described above involves two key concepts: *Needs* which involves the prioritization of global poverty reduction and the *Limitations* to be imposed by the state of

[14] Arguably with the release of Rachael Carson's *Silent Spring*.

technology and social organization to facilitate the conditions needed for the environment (absorption of human pollutants) to meet present and future needs (WCED 1987, p.427). This doctrine has augmented the acceptance of status quo economy and environmental compatibility (Chertow, 2001). Tom Kuhlman and John Harrington (2010) note that the UN definition placates the intrinsic value of nature. Instead, it exalts SD as resource availability for intergenerational equity and welfare (p.3438). Because ecological sustainability is of paramount importance in context of this paper, sustainable development will be defined by the 1980 IUCN definition, while that of the 1987 WCED as the definition of conservation.

The concept of SD is most often defined by three interrelated aspects of human reality.

> *Development is a multidimensional undertaking to achieve a higher quality of life for all people. Economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development* (UN, 1997).

SD is represented by spheres or pillars. Most popularized is that of inter-lapping spheres attributed to Elkington's 1994 economic prospect of a triple bottom line (i.e., people, planet, and profits). This involves the interplay of economic, social and environmental capital. All dimensions are somewhat independent and overlap in particular subsections. Only when actions are taken into consideration or balance all three dimensions are they sustainable. Another model displays concentric circles, derived from the World Conservation Strategy's depiction of conservation. Under this paradigm the economy, a human invention is engulfed by society, which is engulfed by the environment (See: Appendix 5: Models of Sustainability) (IUCN, 1980). Here the "economy is a subsystem of the finite biosphere that supports it" (Daly 2005, p.100), and the economy is dependent upon society, which is dependent on nature. To better comprehend the intent of these differing concepts resilience must be examined.

Ecological Resilience, Panarchy and Social Ecological Systems

A common thread in academia involves the transition from the term *sustainability* towards that of *Ecological Resilience* (Brown & Homer-Dixon, 2014). The switch to resilience is associated with too many definitions of sustainability inciting confusion and the cooption of "weak sustainability" by industry which has diluted its effectiveness. The importance of resilience theory resides in predictions of intense climatic changes and the preparation required for adaptation (Folke, Hahn, Olsson, & Norberg, 2005). Resilience is a central aspect of ecological and human system dynamics and fundamental to improve the adaptive capacity (Resilience Alliance, 2014) that will aid humanity in better environmental management. To better understand the complexity of systems fundamental to sustainability and development, *panarchy* will be examined.

In essence resilience is the "capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Folke *et al*, 2005, p.443). Society and the ecosystems are self-organizing complex adaptive systems (Hollings, 2001). This attribute combined with the "ability to build and increase the capacity for learning and adaptation" allows for them to be resilient, and retain greater ability to adapt to changes (Resilience Alliance, 2014).

Holling's (1973) seminal work defined resilience. He differentiated engineered and ecological resilience. Engineered resilience applies to non-variable performances such as efficiency, constancy, and predictability to create fail-safe designs, whereas ecological resilience depends upon persistence, change, and unpredictability (Hollings, 1996). Nature is a complex adaptive system, whose fluctuations demand focus upon conditions of persistence rather than equilibrium states desired by engineers (Hollings, 1973).

Resource management and ecological conservation remains rooted under the pretenses of equilibrium centered, centralised, and top-down management techniques applied to ensure engineered resilience (Folke, 2006). Human initiatives to this day continue to promote homogeneity to simplify extraction, production, and controlling practices based on maximum stainable yields, despite previous attempts that resulted in anthropogenic ecological disasters[15].

Although engineered resilience is essential for limiting reductions of natural stocks (e.g. earthquake proof sky rises prevent rebuilding and associated material costs), ecological resilience retains greater importance for global sustainability and development, as it concerns *probabilities of extinction*. Ecological resilience is optimized by high ecological diversity or biodiversity and high fluctuations through space and time; homogeneity is likely to promote the antithesis (Holling, 1973). Social systems as part of the natural world establish resilience through the human capacity to "anticipate and plan for the future" (Resilience Alliance, 2014). The shift to better resource management requires ecosystem thinking, which is based upon the systems world view and the notion of social-ecological systems (SES).

To Berkes (2004) the world-systems view[16] posits the environment as an unpredictable adaptive system that acts and reacts at multiple-scales and SES are a primary mode of interaction in the world system. In 1998, Fikret Berkes and Carl Folke coined SES to emphasize the "integrated concept of humans in nature and to stress that the delineation between social and ecological systems is artificial and arbitrary. Research suggests that "social-ecological systems have powerful reciprocal feedbacks and act as complex adaptive systems" (Folke et.al, 2005,

[15] Scott (1999) describes the dangers of quantitative observation for biological processes. In the 18th century, the goal of scientific forestry was to obtain maximum sustainable annual yields of lumber, through easily manageable mono-cultured forests. The forests demonstrated negative results after 100 years and the forests died by the second generation (due to loss of biodiversity required to provide nutrients). From this point the words *Waldsterben* or forest death and *Nachhaltigkeit* or sustainability entered German Vocabulary.

[16] World-systems view attempts to understand the modern world as a whole unified system over long periods of time (Gotts, 2007). The world-systems are based on regimes (the most powerful nations), powerful agents and influential social actors at all scales and how they affect society and global phenomena (See Wallerstein).

p.443). SES bridge society's actions with occurrences in nature, and through social initiatives and ecosystem management[17] attain greater adaptive capacity and enhance ecological resilience. Thus, ecosystems management involves the complex dynamics that exist between the needs, wants and limitations of humans when interacting with the environment, and the interactive responses of both elements through time and space.

What if we could devise metrics for understanding how to best foster system resilience and sustainability in the world system? This result could arise by better understanding *panarchy*.

> The panarchy describes how a healthy system can invent and experiment, benefiting from inventions that create opportunity while being kept safe from those that destabilize because of their nature or excessive exuberance (Holling, 2001, p.390)

System sustainment requires healthy relationships to facilitate persistence through cycles. Panarchy describes the complexity of systems by providing a simplified framework that acknowledges a hierarchical[18] structure in which natural, human, and social-ecological systems operate simultaneously and indefinitely in adaptive cycles of growth, accumulation, restructuring, and renewal. The adaptive cycle is characteristic of SES. These cycles occur within nested spatial scales and time-ranges (See Appendix 4: Panarchy). Should humanity come to comprehend these elements of panarchy, it may know when and where to engage with systems, and whether the interactions will benefit or deter resilience and sustainability (Holling, 2001).

Under the auspices of this concept a new definition of sustainability and SD is offered.

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[17] Many agree that adopting ecosystem-based management approach would be preferable. This necessitates the recognition of ecosystems as complex adaptive systems and focusing on essential processes that provide natural income and services at multiple scales. Inspecting only ecological systems to make sustainability decisions would be a mistake. Where an ecosystem may be believed to have "lost resilience" the society's adaptive capacity may transform and shape ecological processes (Folke et. al., 2005, p443). Ecosystem-based management recognizes SES and society's ability to adapt and shape change is most-likely the greatest opportunity to ensure resilience (Ibid, p.444).

[18] A hierarchy is a set of "semi-autonomous levels formed from the interactions among a set of [similar] variables… Each level communicates a small set of information or quantity of material to the next higher (slower and coarser) level (Holling 2001, p.392). Two services are offered by each level of a hierarchy: the dynamic function known as *an adaptive cycle*, creating and experimenting with innovations within a level, and conditions for conservation and stability for the faster and smaller levels (Ibid, p.393).

> Sustainability is the capacity to create, test, and maintain adaptive capability. Development is the process of creating, testing, and maintaining opportunity. The phrase that combines the two, "sustainable development," thus refers to the goal of fostering adaptive capabilities and creating opportunities (Holling, 2001, p.390)

The process for development cannot exist without the capacity for sustainability; therefore, the opportunities required for development depend upon the quality of inventiveness and experimentation within conditions that maintain adaptive capabilities. Resistance or rigidity to change and stability are important qualities, but diversity and flexibility provide greater resilience, which is critical for recovering and adapting to shocks. When a system operates with low levels of adaptive capacity, it can flip to a less productive system.

By acting within panarchy, knowledge of the nuances of systems could be essential for dissuading flips to unwanted extinctions. Humanity's foresight and predictive capacity perpetuates understanding of anthropogenic imbalances in panarchy. As human, natural, and social-ecological systems defy the conditions necessary for maintaining adaptive capacity, the true extent of the effects of global climate change and associated shocks remains a contentious debate.

The complexity of the modern world systems has generated notions that actions for sustainability/combating climate change and sustainable development must occur simultaneously at multiple levels. "Sustainable development issues.... implicate multiple scales (micro, meso, and macro), multiple levels of governance (local, regional, national and global) and multiple the diverse social actors" (Dale & Newman, 2010, p.8). The current debates on curbing the effects of climate change and further ecological degradation or extinctions are many, and will be discussed in the following paragraphs.

Sustainability in study for economists

The economic system is a human invention that categorizes the value of all things. Things here will be referred to as resources, assets or capital – these things maintain a level of value. All forms of capital are created by spending time and effort in transformation and transaction activities (Ostrom, 1995). All resources in the economy are either human-made or derived from nature, renewable or non-renewable (Kuhlman & Harrington, 2010).

These resources can be divided into various forms of capital. Apart from natural capital all forms of capital are created by humans[19]. Natural capital is anything in nature that produces goods and services presently and in the future. Here natural capital maintains a stock, and a sustainable harvest acts as "natural income". Throughput is the economic term that refers to the rate at which natural resources are used (Daly, 2005). Natural capital is defined by three categories: non-renewable resources, renewable resources and the rate to which nature can absorb human emissions and pollutants without side effects (Roseland, 2005). It is essential to differentiate natural capital from all others in order to explain weak and strong sustainability.

The simple differentiation is eased by the models of sustainability. The concentric circles define *strong sustainability*, which according to Kuhlman and Harrington (2010) necessitates ecosystem services and stewardship. All forms of capital and most importantly all life is dependent upon ecosystems and their services *or* nature and natural income. Therefore, natural capital is more valuable than man-made capital. Under this principle, humanity should not

[19] Important notions of man-made capitals include the following. *Physical capital* is the stock of material resources such as equipment, buildings, machinery and other infrastructure that help to produce future income. *Economic capital* is how humanity allocates resources and makes decisions about our material lives. Economic capital should be maintained in order for people to live off the interest, or income. *Human Capital* is health, education, skills, knowledge, leadership, and access to services (Roseland, 2005). *Social Capital* is the arrangement of human resources to improve flows of future income. It is created when individuals work together to create opportunities that are unavailable when isolated (Ostrom, 1995).

generate throughput as it currently does as it comes at humanity's demise (Daly, 2005). Here "whatever the level of human-made assets, an adequate stock of environmental (or natural) assets alone is critical in securing sustainability" (Roseland, 2005, p12). *Weak sustainability* in turn most often corresponds to neo-classical economics, which prefer the "triple-bottom line" version of sustainability; in this instance natural and anthropogenic capitals are interchangeable (see Solow, 1974; Hartwick, 1977). Under this assumption intergenerational justice stipulates that so long as future generations receive a capital stock of equal value (where all forms of capital are of equal value), then sustainability has been met[20] (Daly, 2005).

Despite the academic debate over the utility and practicality of either concept, there is reason to believe both can operate in harmony. Kuhlman and Harrington (2010) note that although transformed capital cannot be traded into natural capital, development necessitates the loss of some natural resources. In the same vein, some ecosystems and their services must be preserved at all costs. The utility of both will don further importance as environmental impact and life-cycle assessment techniques become intrinsic aspects of development and policy (p.3443).

Herman Daly (2005) an influential ecological economist, discusses in depth the intricacies of traditional or neoclassical economic thought and that which is based upon the strong sustainability economy. Capitalism drives towards growth and maximizing outputs, and neoclassical theory claims that these elements are a panacea for all economic ills of the modern world. Traditionalists claim an environmental Kuznet[21] curve shows that pollution will rise, max-out and then decline. Due to demands for constant growth, in a finite planet, humanity is

[20] This has been noted as the flaw in the Bruntland reports definition of sustainable development (Daly, 2005).
[21] The theory states that as an economy develops, the natural cycle of economic inequality occurs, driven by market which at first increase inequality, and then after reaching a maximum level decreases.

growing *uneconomically*[22], which benefits few but harms most everyone else. Thus transitioning to a sustainable or steady state economy is essential.

Under the premises of strong sustainability, it is recognized that the earth maintains finite resources and is limited by the laws of thermodynamics[23]. Based upon this information, a "new economics" may need to be established (p.102). In microeconomics, there exist systems to identify when the costs outweigh the benefits or utility and stop that particular practice. However, in macroeconomics such a system does not exist; there is no rule or international policy for when to stop. In the sustainable economy, growth must stop, but developments for welfare do not (p.103). To better examine the sustainable economy, an examination of economic and ecological measurement tools will be examined.

Measuring Sustainability

To reach a sustainable economy, it is argued that changes must be made to the traditional economy (Daly, 2005). Strong sustainability must be a targeted effort, while weak sustainability less emphasised, but perhaps the two concepts can coexist. Several concepts are important for examining the relationship between the three pillars of sustainability and measuring outcomes: GDP, utility or "satisfaction of wants", throughput of natural capital, $I=PAT$ and the ecological footprint. The examination will help to portray why sustainable solutions are necessary.

GDP combines the notions of qualitative improvement (development) with quantitative (growth). Natural resources provide goods and functions that are not calculated in current

[22] "When increases in production come at an expense of resources and well-being that is worth more than the items made. There is an undesirable balance of quantities known as utility and disutility… the level of satisfaction of the population's needs and wants… [compared to] the sacrifices made by increasing production and consumption (Daly, 2005, p.103).

[23] "[T]he biosphere is finite, nongrowing, closed (except for the constant input of solar energy), and constrained by the laws of thermodynamics. Any subsystem, such as the economy, must at some point cease growing and adapt itself to a dynamic equilibrium, something like a steady state" (Daly, 2005, p. 102).

capitalist economics[24]. Capitalist nations utilize GDP as a proxy measurement of economic progress and human wellbeing. Designed in the era where unlimited growth seemed feasible and "quality of life" meant high economic standards of living (high consumption and high GDP) (McDonough & Braungart, 2002, p. 36), GDP may be considered a failed proxy because it measures only what is produced and sold – not the capacity to do so.

Herman Daly (2005) does not believe that the GDP indicates well-being, only economic activity. He continues to define the concept and its faults:

> it is defined as the annual market value of final goods and services purchased in a nation, plus all exports net of imports… those that are inputs to further production are excluded… GDP does not subtract either depreciation of man-made capital (such as roads and factories) or depletion of natural capital… GDP also counts so-called defensive expenditures in the plus column… for example, the expense of cleaning up pollution (p.105).

In this instance, environmental disaster and other catastrophes result in natural capital exploitation to return to former standards of living. These instances signal GDP improvements from interactions during the reconstruction processes. As Luke (2011) claimed, the fallacy of this economic paradigm, known as the *Fallacy of the Broken Window* was conceived in the 19th century (see Bastiat, 1850).

A fundamental fault of the economy, which applies values to all things, is that it bases the value of everything *against* arbitrary concepts (i.e. floating currencies, G.D.P. and derivatives) that are roughly based on scarcity, innovation, demand and productivity, instead of measured benefits and necessities for planetary welfare, such as water or air quality, ecosystem diversity, human happiness, the quality of life or even a tree's functions (McDonough & Braungart, 2002). Benyus (1997) discusses a new way of monitoring economic welfare called Green GDP. This would require placing a market value on all natural resources, their outputs (i.e. natural income)

[24] According to T.M Das (1980) in *The Value of a Tree*, one tree is worth $193,250. As "a tree living for 50 years will generate $31,250 worth of oxygen, provide $62,000 of air pollution control, in control social erosion and increase soil fertility to the tune of $31,250, recycle $37,500 worth of water and provide a home for animals worth $31,250. This figure does not include the value of fruits, lumber or beauty derived from trees" (Bennet, p. 468, 1996).

and investment ledger. This version of GDP would account for additional metrics: life expectancy, infant mortality, health of population, literacy, crime, accumulation of wealth, income distribution, air and water quality, and recreational opportunities (p. 281). Clifford W. Cobb and John B. Cobb, Jr. have created an index of sustainable economic welfare (ISEW), which takes into consideration many of the items neglected by the GDP measurements. Accordingly, since the 1980's the ISEW has found that the negative factors have been increasing faster than the positive ones (Daly, 2005, p.105).

The question of measurability is essential for proving the benefits of economic functions. Under the pretenses of SD defined by the Bruntland Report, sustainability is a concept that can be achieved by neoclassical economics as it focuses upon the maintenance (or increase) of utility through generations. The concept is challenged by the unquantifiability of utility; an experience that cannot be transferred into the future (Daly, 2005, p.103). When considering natural capital and throughput which can be measured and priced, SD in this instance relates to maximum sustainable yields and capacity to absorb wastes.

The *I=PAT* formula describes a long-lasting debate over the greatest causes of environmental damages and impact: human population or human technology and waste. The debate commenced with proclamations of over-population as un-sustainable. Thomas Malthus (1798) declared that global population expansion will outstrip natural resources, with exponential human growth and linear growth in agricultural productivity as its crux. The notion was revived with bleak predictions, notably the Club of Rome's *The Limits of Growth* predicted that if current rates of population growth, industrialization, food production, pollution and resource depletion continued unchanged the limits of growth would be reached within 100 years (Meadows, Meadows, Randers, & Behrens, 1972).

Despite various incarnations and its general lack of absolute definition *I=PAT* is a beneficial concept for explaining sustainability debates. The argument is divided into Faustian[25], Neo-Malthusian, and Cornucopian factions. Barry Commoner (1972) argued that technology was harmful to ecosystems (i.e. Faustian). New technologies (e.g. manufacturing processes) are responsible for the largest environmental detriments, the pollutants released annually alone were to be regarded as environmentally impacting. This necessitates the reductions in national productive outputs (Chertow, 2001). Neo-Malthusians Paul Ehrlich and John Holdren (1972) believe that regardless of technological advances over-population would always over-stress the environment. For them technology could slow but never deter environmental depletion. The Cornucopian view offers an alternative to these pessimistic beliefs. It states that population growth is essential for global wellbeing that increasing population and wealth is the driving force for new technological development (Chertow, 2001, p. 15).

Whether a Faustain or Neo-liberal, scientific evidence showcases that humanities impact is becoming a major concern. Ecosystem and biotic diversity are diminishing worldwide (Naeem *et al*., 2009). Serious causes include: human development, resource extraction, and pollution at rates faster than the earth can absorb and regenerate (Wackernagel *et al*., 2002, Rees & Wackernagel, 2013). The rate of consumption and pollution in developed and now developing (i.e. BRICK[26]) countries, leads many to believe that global human society is itself un-sustainable. Rajendra Pachauri, chair of the International Panel on Climate Change (IPCC), stated that "consumption and people's desire to consume has grown out of proportion… The reality is that our lifestyles are unsustainable" (Randerson, 2009).

[25] Faustian views follow that of Goethe's novel, the protagonist Faust sells his soul to the devil in return for power over the physical world. This fable is interpreted as a metaphor for the adoption of industrial technology

[26] The countries with the highest rates of G.D.P. the BRICK countries are Brazil, Russia, India, China, and South Korea.

William E. Rees and Mathis Wakernagel's famous invention of the ecological footprint provided a tool to measure the ecological pollution of a country, company or human being. The tool demonstrates how many Earths would be required if everyone on Earth consumed at the same rate as the one conducting the test[27]. According to a 2002 study, "humanity's Footprint has increased over the last forty years from 70% of the biosphere's capacity in 1961 to 120% in 1999" (Wackernagel *et al*., 2002, p.9266). There is a debate about ecological footprints, about its utility and accuracy, however it is argued that it remains the most effective ecological impact tool (Rees & Wackernagel, 2013).

Anthropogenic ecological impacts are most profound in the field of climatology[28]. Since 1988 the IPCC has been examining future climate changes caused by greenhouse gas emissions. These pollutants derived from human technologies are predicted to cause irrefutable damages to various ecosystems throughout the planet, with even more dangerous future scenarios should emissions not decrease (Gore, 2008; IPCC, 2013).

Quirks of socio-economic systems are nonetheless responsible for the need for SD, as neo-liberal capitalism focuses upon solely capital gains rather than environmental debt. As the economic system determines how the natural environment is valued and exploited, changing this system is required to protect the Earth's ecosystems and prevent further catastrophe. The natural environment dictates the health of the two other pillars of global human sustainability; it is situated as a good focal point for a global sustainability revolution.

[27] The method is designed to estimate human demand for biocapacity, defined as: 'the aggregate area of land and water ecosystems required by specified human populations to produce the ecosystems goods and services they consume and to assimilate their carbon wastes.' According to the WWF (2012) Results from 2008 demonstrate that the Ecological Footprint had reached 2.7 global hectares (gha) per capita compared to only 1.8 gha of available biocapacity per capita. (Rees & Wackernagel, 2013)

[28] Science shows with 95 percent certainty that human derived pollutants are the main cause of climate change, observed since the 1950s (IPCC, 2013).

Sustainable Solutions

There are various potential avenues for a sustainable global system. Solutions must first be derived from society itself, through a culture reinforced by policy and governance at all scales, and redesigning how humanity lives, interacts, and creates. New paradigms include: policy and laws to reduce pollution and resource extraction, to develop methods for governing SES adaptively, strategies to have society and the economy reflect natural systems, new cost-effective economic endeavours like industrial ecology, developing techniques to reduce resource needs and to reuse and to recuperate waste, to pursue the Green Economy (GE) through technologies that reduce pollution and help conserve resources, and through community based social economic opportunities for democratic and triple bottom line business models. While leaders in these realms are active, the maintenance of financial sustainability may restrict the speed of sustainable developments. The progress of these burgeoning activities are influencing the sustainability of the current economic system, however, whether or not intergenerational responsibility and justice are the motivators or challenge existing power structures remains debatable.

Policy, Management and Strategies for a Sustainability

Humanity is a major catalyst to the destabilization of biotic and abiotic systems (Folke, 2006). Climate change, ocean acidification, extinctions, depletion of stocks, and so on are serious signals for concern that must be dealt with at all scales. Dale and Newman (2010) note how at all scales failures to develop sustainably are largely a social issue, with failure to recognize economic boom and bust development cycles[29]. They associate this failure with planning and policy inadequacies (p.6-7). Emphasis has been placed upon international policy and regulation

[29] Some of these cycles include The Kuznet curve and swing and Kondratiev wave.

on pollution of the commons and extraction of natural resources (Gore, 2008; Daly, 2005). Gore (2008) believes an international carbon tax is necessary for sustainability. Daly (2005) discusses the importance of policies for cap-and-trade systems that he describes: "a limit is placed on the total amount of throughput allowed, in conformity with the capacity of the environment to regenerate resources or to absorb pollution" (p.104). He continues by claiming that commons such as the ocean and atmosphere as *pollution sinks* that are no longer free but a scarce asset to be bought and sold on the open market; thus these cap-and-trade systems showcase how the free market and government have specific roles in developing these policies.

Governments should be taking the initiative to transition to the sustainable economy. Governments could be taxing things that are considered "bad" like pollution, excessive energy use, and throughput, instead of what is considered "good" like income (Benyus, 1997; Daly 2005). They could adopt policies to purchase contracts and goods from companies that are early adopters of more sustainable practices. This could act to incentivize other institutions and corporations to make the change (e.g. the Clinton administration adopted this such policy) (Benyus, 1997, p.280).

Science and policy need to address interplay within panarchy and account for SES resilience and learn to manage by change rather than simply to react to it since uncertainty and surprise are common aspects of management (Folke, 2006, p.255). Government and corporations have a huge role to play in developing an ecologic economy. Adaptive management could be the best technique for effectively maintaining resilience given the complexity of SES (Folke 2006; Folke et. al 2005). Folke (2006) remarks that society is attempting to better manage and create resilient SES by integrating the social dimension into the adaptive management paradigm, as it is

proving useful for responding to ecosystems change. The Resilience Alliance (2014) defines the actions of the ecosystems approach:

> Adaptive management identifies uncertainties, and then establishes methodologies to test hypotheses concerning those uncertainties. It uses management as a tool not only to change the system, but as a tool to learn about the system. It is concerned with the need to learn and the cost of ignorance, while traditional management is focused on the need to preserve and the cost of knowledge.

While implementation of this resource management style is still developing, increasingly emphasis is falling on transforming into improved SES rather than adapting. This emphasis demands greater societal involvement in ecological management since improved adaptive management requires adaptive governance.

While it maintains much of the characteristics of ecosystem and adaptive management, the adaptive governance framework is dependent upon cooperation of actors and stakeholders in multi-level institutions that interact within a diverse set of social and ecological scales (Folke, 2006). It is comprised of at least four essential components:

> understanding ecosystem dynamics; developing management practices that combines different ecological knowledge system to interpret and respond to ecosystem feedback and continuously learn; building adaptive capacity to deal with uncertainty and surprise including external drivers; and supporting flexible institutions and social networks in multi-level governance systems (Folke *et al*., 2005)

The combination of SES with resource management has created a blurred line between ecology and sociology. The human factor and governance issues are proving the greatest challenges to long term sustainability, as they maintain the potential to catalyse both enhancing ecological resilience and SES adaptive capacity and diminishing them. Adaptive governance could prove to be a key method in SD and developing sustainable communities.

Daly (2005) argues that the traditional capitalist system is ecologically unsustainable and that developing an economy that can be sustained within the finite biosphere requires new ways of thinking. Benyus (1997) examined the potential of biomimicry (copying natural systems and

biological functions to generate more eco-friendly methods of development and production). In the conclusion of her book *Biomimicry: Innovation inspired by nature*, she discusses three strategies for species survival in nature (she calls them "nature's economies"). Type I strategy is described as opportunists[30] who continuously deplete and seek the next source of sustenance. The danger is a system breakdown when despite the natural signs continues to grow despite the warnings. This neglect is referred to as *overshoot* (Dale & Newman, 2010). Humanity is "concentrating on growth and throughput (how fast raw materials can be turned into products) without giving much thought to efficiency" (Benyus, 1997, p.249). Type II systems are focused on longer term habitation of a space, focused upon preparing and storing energy for potential future resource limitations. Type III strategies involve species that have mastered efficiency. It is a patient strategy with extreme loyalty to place, giving back nearly as much energy as they take from systems. These species dominate a space usually until the next large disturbance. They have fewer offspring who are larger and live more complex lives (Ibid, p.249-250). Benyus suggests ten strategies that could evolve human economies and habits to better emulate a type III strategy:

1. Use waste as a resource,
2. Diversify and cooperate to fully use the habitat,
3. Gather and use energy efficiently,
4. Optimize rather than maximize,
5. Use materials sparingly,
6. Don't foul their nests [i.e. do not pollute],
7. Don't draw down resources [by designing for an extended life cycle],
8. Remain in balance with the biosphere,
9. Run on information [or allocate resources when and where required],
10. Shop locally (p.253-254).

These principles are already being adopted all over the world. They are becoming a new focus for education, generating new practices in existing industries while providing a philosophy

[30] Type I systems are opportunistic, travelling from one resource source to the next. They attempt to maximize the numbers of their offspring, in order to better ensure discovery of a new resources to exploit and proliferate.

routed in sustainability for new opportunities in grow, development and change in the complexity of linked SES.

Industrial Ecology (IE) or the Circular Economy is a progressive form of industrial production that falls under the no-growth or steady state fraternity. It has been described as the "marriage of technology and ecology" (Chertow, 2001, p.10). The discipline maintains its involvement in industrial processes, but bases them upon biological systems. Proponents acknowledge "strong sustainability" and necessity for conservations by attempting to revolutionize industrial processes without harming the biosphere (Benyus, 1997). The most important factor of IE is that it acknowledges ecological resilience, the complexity of interactions in SES and the importance of affecting change through various scales (Lifset & Graedel, 2002).

IE is well defined in Reid Lifset and Thomas E. Gradel's (2002) introduction to a book on the topic.

> the study of the flows of materials and energy in industrial and consumer activities, of the effects of these flows on the environment, and of the influences of economic, political, regulatory, and social factors on the flow, use and transformation of resources (White, 1994) (p.4).

Industrial ecologists believe in technology's potential to solve the world's environmental woes while it does not disregard its impact. To ecologically design items to avoid causing ecological damage (Lifset & Graedel, 2002). It is a field that trusts in ecological modernisation's[31] ability to establish a more effective world system. IE plans to change various factors of modern industrial processes. They wish to encourage management and the policies directing industries to follow

[31] "Moving beyond its old-industrial stage, the modernisation of society now also entails ecological modernisation, i.e., re-adaptation of industrial society within the global geo and biosphere by modern means such as a scientific knowledge base and advanced technology in order to upgrade the earth's carrying capacity and make development more sustainable" (Huber 2008, p.360). This pathway requires innovations in law and regulation to accommodate technological environmental innovations (TEI). The concept may constitute as nature conservation, but is usually about developing the environment, with the goal of "intentionally co-shaping geo- and bio-dynamics to the best of knowledge and belief" (Ibid, p. 361).

their examples: inter and multidisciplinary research into system energy flows and material life-cycles, dematerializing products by reducing the amount of materials used to complete a task, greater energy efficiency and effectiveness in production, advanced recycling processes and the information technologies for sharing information for industrial symbiosis (Lifset & Graedel, 2002).

IE acknowledges the cycles of resources and energy in nature. In nature all waste is food for other biological systems (McDonough & Braungart, 2002), this is referred to as a closed loop. In modern society waste becomes useless; this is known as a linear model. In an attempt to curb overshoot, IE would prefer that all companies participate in information feedback links to limit the amount of virgin materials exploited and to engage in a circular economy. "As new material exchange brokerages are become more proliferate, companies will at a greater rate be able to sell their waste products to other industries to be used as resources" (Benyus, 1997, p.274). The practice known as "industrial symbiosis", is creating these opportunities where one industry's waste by-products are exchanged to others as resources for production (Lifset & Graedel, 2002).

IE is an excellent example of attempts to achieve a type III economic strategy. As this economic strategy serves as an ideal, it may become a reality through the Green Economy. Perhaps IE's synthesis of ecological modernism, research, development, and greater participation of government and companies exemplifies the positive changes possible in the bourgeoning Green Economy.

The Green Economy

The idea of a green economy (GE) is based upon principles of SD, utilizing alternative or renewable energy technologies for economic enhancement, and resource and energy

conservation. The notion gained traction after the Great Recession of 2008[32]. Many believed that the creation of new "green collar jobs" would prompt economic recover. Promoters of the GE provide a hopeful rhetoric where the "green economy is based on the principle of ecological and appreciative limits it is not at odds with better jobs, macroeconomic stability, or improved standards of living (Mendonça, Jacobs, & Sovacool, 2009, p.12).

Proponents claim that SD and the green economy will solve major issues, however, its definition and function is disputed. Van Jones (2008) believes that opportunities provided by the green economy will solve radical socioeconomic inequality and rampant environmental destruction[33]. Makower (2009) suggests that the green economy will focus on different priorities and change business culture (as cited in Green & McCann 2011, 453). The GE's goals are rather vague and could be based on de-growth or no-growth economies, or the status-quo of creative destruction with cycles of economic growth through innovation and invention (Davies & Mullin 2010, p.1). If the transition towards the GE is reinforced more by financial and technical manoeuvring rather than social and political, it may maintain the global neoliberal power structures that seem to create social inequities and environmental insecurity (Castree, 2008).

Nevertheless the green economy is capitalist, devoted to technological progress and financial capital more than anything else. The GE's focus on technological environmental innovations (TEI) appears to centre itself upon energy efficiency, renewable energy technologies and other 'green technologies', under the banner of reducing ecological damage, without drastically challenging global economics need to develop continuously (Huber, 2008).

In Mendonça, Jacobs, and Sovacool (2009) the main topic discussed is energy outputs, financial savings and gains.

[32] This event was marked by the American Housing Crisis.
[33] This ideology is perhaps better represented by the Social Economy.

> The green economy has less to do with environmental wisdom than with financial and political well-being and sustainability. It may even have more to do with the enormous potential of export markets for green materials and technologies (p.5).

The potential financial opportunities in the GE definitely encourage many countries to invest in these new "sustainable" technologies. Jacobson (2009) states that the global potential of untapped renewable energy is about 201 times the total electricity consumed in 2007, which provides a huge opportunity for improvement. Mendonça *et al*. (2009) believe that "[r]enewable energy technologies have the potential to become the backbone of [the] energy system" (p.xxii). As a leader in a new economy businesses, states and other organizations could see phenomenal economic advantages in developing 'green-tech'. As emphasised by Huber (2008) who states that the most commonly articulated arenas of TEI are: renewable energies, carbon capture and storage, and transgenics (Genetically modified organisms (GMOs)) and nanotechnologies (p.361).

Countries and companies around the world are investing in alternative and clean energy technologies. Huber (2008) argues that the main actors must be nation-state governments, who should adjust policy to promote and support technology environmental innovative (TEI) companies that may become the leaders of new markets (p.360). In 2009, the International Renewable Energy Agency was developed to influence government strategy. Most of the political rhetoric behind developing TEI for the green economy is that it will stimulate jobs.

Pavan Sukhdev (2011) head of the Green Economy Initiative of the United Nations Environment Policy, stated that the "green economy report, Towards a Green Economy, demonstrates that greening is not a drag in growth but rather a new engine for growth, that it is not a cost in jobs but a means to new and decent jobs", and that "sustainable development can only be met if we actively engage the Green Economy". The United Nation Environment Programme (UNEP) (2008), states that over 20 million jobs in green energy will be created by

2030. According to Ringo (2010), in the US Obama and Biden claim greening will create 5 million jobs, and that "clean energy jobs in the USA have grown at more than twice the rate of the overall job market over the past decade".

The 'green collar jobs' that Jones (2008) describes are "family-supporting career-track jobs that directly contribute to preserving or enhancing environmental quality" (p.17). However, the literature reveals there is little consistency with the definition of green jobs, and in most cases refers to renewable energy or clean-technologies. Although there is a lack of universal definition, Mendonça *et al*., (2009) have found some common themes:

- Offer environmentally friendly products and services,
- Available to all education and skill levels,
- Provides living wage and health benefits,
- Provides opportunities for career development,
- Will be locally based. (p.7)

Green and McCann (2011), found that economy-driven companies cannot find enough green-collar qualified employees (p.460). However, a counter argument holds that green jobs in the USA will displace existing jobs (Houser, *et al*., 2009; Michael & Murphy, 2009), and that the high government investment required will cost more than keeping existing non-green jobs (Green, 2010).

In Canada, Webb and Esakin (2011) found a majority of interviewees believed that the GE could increase Canada's competitive advantage and provide cost savings. Taking a leadership role would boost the country's reputation (p.i). Crucial requirements were noted as: political leadership, a mix of financial mechanisms, regulation, procurement, investments in R&D and infrastructure, and education and skills training (p.ii). This study accentuates the benefits and requirements for green economic developments for Canadian society. With government investment, new companies and a greater focus on GE in HEI more 'green jobs' should come.

The Committee on Environmental Policy United Nations (CEPUN) have identified education as essential for transitioning to the GE. The group highlights needs for green skills, raising awareness, public participation and sustainable consumption. HEI are already acting towards developing to integrate itself in the growing market. There may be advantages for colleges and universities to become leaders in the GE.

Green and McCann (2011) performed a benchmarking study[34] of leadership strategies for the GE. Leadership is noted as an important aspect for innovation. Leaders who are willing to take risks can pave the way for opportunities and augment an institution's diversification, "organizations are struggling with the issues of ethical behavior by managers and how to motivate their employees toward greater performance" (p.462). The authors conclude their research by stating that,

> there is little research in how the green economy will impact the strategy, structure, and culture of today's organizations; new leadership theories may need to be developed to assist organizations in developing the right kind of leadership for the green economy; the creation of green jobs may infuse organizations with more emphasis on ethics, values, and leadership competency; the overly dependence on new technologies to create jobs and sustain society's quality of life carries unintended consequences; and agrarian leadership may offer organizations a better ability to lead postmodern workers in the green economy (p.461)

The agrarian leadership model[35] is believed to influence greater productivity in workers. The authors believe that modern consumers and workers will begin to emphasis ethics and values in the companies they purchase from and support (i.e. Corporate Social Responsibility[36] (CSR)).

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[34]Used to "improve performance, understand relative cost position, and gain a strategic advantage" (Green & McCann, 2011, p.447).

[35]Leadership that is driven equally by ethics, values and results, view all followers as critical members of their team, and do not allow technology to drive their value systems (p.457).

[36] The CSR movement believes corporations should operate ethically. However, under this model "ethics" are determined and reinforced by the companies. In the early 1990s the movement began with internal modifications; equity in hiring, financial transparency, etc. as a method of improving image (Aguilera and Cuervo-Cazurra, 2004). By the late 90s, non-profit advocacy and public scrutiny of the working and environmental conditions of 'non-western' employees of multinational corporations, enticed the CSR movement to pay more attention to ethics within their supply chains (Kolk and van Tulder 2004). The principle of this external focus of CSR is that corporations can improve the social and ecological conditions in their supply chains by changing the way they run their businesses.

Leading institutions in the GE may be adhering to values and ethics that conform to principles of SD. In HE it is clear that a policy of developing and cultivating champions at senior levels in the university is likely to be important (Mosey, 2012, p.603) for multidisciplinary programs and projects, that will be addressing the greater societal issues associated with the GE and SD.

Luna, Martin, Scott, Kemp, and Robertson (2012) state that "universities could play a leading intellectual and practical role in shaping [state] policy aspirations around a green economy and a sustainable future for [everyone]" (p.4). CEPUN notes that education in sustainable development (ESD) and the GE are inherently linked; however, ESD should be recognized as a key element towards transitioning not a panacea for it. According to Paul (2005) the "global education industry has become the essential vehicle for the transmission of culture and knowledge, and perpetuating civil society" (p.107). Therefore, should HEI become leaders in developing sustainably and pursing the GE, the ideas should permeate into mass culture and society. As universities can influence global economic trends through research (Ruby, 2005), the more research conducted for GE and sustainability the greater a trend it should become. Sustainability is becoming a competitive advantage and a method to continually improve an institutions overall performance (Green & McCann, 2011). The new knowledge and R&D in 'green' and sustainable alternatives are advancing competition in these fields and enhancing the green economy.

Technology based solutions may reduce humanity's ecological footprint. The question remains whether increased global employment and standards will increase affluence and rates of consumption to a global detriment or will technological advances allow humanity to leapfrog catastrophe? The discourse of ecological modernism or technological solutions to the

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The leading method for achieving this has been through setting standards, or codes of conduct, for the suppliers and producers these corporations work with.

environmental issues of climate change and resource over-consumption, is refuted by some authors who believe the planet as too complex for these issues to solved with technocratic solutions alone (Orr 1991; Davies & Mullin, 2010). Authors Davies and Mullin (2010) describe how SD must also address issues of equity and justice while transitioning to a technology focused GE (p.7). They state that the GE must include environmentally focused social economy enterprises (ESEE). The social economy focuses on rebuilding community capacity and is often at the heart of these innovation spaces (p.7). Building community capacity through GE functions and innovations may require focusing on policy drivers and blockages to change. The GE combined with ESEE may offer the greatest solutions. Mendonça, Jacobs, and Sovacool (2009) believe that communities must be empowered to start producing their own energy, (p. xxvi –vii), the synergy of both sustainable minded endeavours may be the zenith of an ESD.

Social Economy

The Social Economy (SE)[37] is considered to be a people oriented form of SD, it enhances the lives of people, communities, and even nations. Since the 2008 recession the SE has captured the attention of governments globally; as questions about economics, investment, environmental and social sustainability have generated greater concern (Downing, 2012)[38]. Tremblay (2012) states that this increased attention indicates how invested people are in solving the interdependent and complex issues that affect the SD of people, communities, nations and global society. The SE provides a strategy for people at all scales "to build the capacity to adjust, to improve self-reliance and responsibility, to identify their assets and to seize opportunities" (p.15).

[37] The Social Economy is also commonly referred to as: Solidarity Economy, People's Economy, Associative Movements, Civil Society, Community Economic Development, and the Third Economy.
[38] In 2011, Montréal hosted the International Forum on Social and Solidarity Economy, with more than 1200 delegates, representing over 60 countries from the Local Employment and Economic Development Program of the OECD.

The SE is "an economic order based on solidarity, participation and cooperation as an alternative to the mainstream neoliberal capitalist economy" (Tremblay, 2012, p.14). As such, it is sometimes referred to as the third economic sector; outside of the public (i.e. governmental) and private (i.e. corporate economies) and focused on community (See Appendix 6: The Social Economy as a Third Sector). Amin (2009) describes the importance of the third sector as "limitations or failures of state welfare and private markets advance an economy that is more caring, needs-based, holistic and associative" (p.10). The SE focuses on w*orking for a common good*, where the commonality is to "achieve specific community benefit, under a triple bottom line (people, planet and local economy)" (Pearce, 2009, p.23). But achieving this may prove more difficult while operating under democratic practices (Emmanuel, 2012b). Despite these potential difficulties, bringing communities together to foster conditions of economic, social and environmental health can empower them to create stability and resilience against exogenous impacts while promoting and/or rejuvenating social capital[39] (Putnam 2000). According to Rupert Downing (2012),

> the social economy is a means to address two central issues in the current economic crisis: The need for economic democratization that allows people and their representatives more say over the means of production and distribution of wealth, and: the imperative to create a more people-centred approach to development that uses the social economy to produce goods and services that produce economic and social benefit but also address environmental sustainability (p.x).

Knowing this, the SE should help develop a better world system through human focused initiatives. It has been developing for quite some time.

In 1992, the UN created Agenda 21 to help promote and facilitate community development initiatives to aid in sustainability endeavours. Agenda 21 was an attempt to involve governments internationally in local community development initiatives. All over the world

[39] According to Emmanuel, (2012a) Social Capital provides the benefits of rewards and reciprocity, and relationship building. Participants and volunteers in SE functions are likely to receive these benefits (p.25).

institutions have since adopted policies on SD. Federal, provincial and municipal governments in Canada have adopted policies and frameworks to promote sustainable development. The importance of supportive policy environments that encourage community-based solutions and small enterprise development to achieve long-term socio-economic sustainability (Tremblay, 2012)

Mark Roseland (2000) believes that ***community d***evelopment for SD requires a new kind of "ecosystem" thinking about human settlements (p.102). Communities are involved in the complexity of SES, and attaining the resources necessary for SD may depend on their ability to interact amongst various scales, governance and policy issues, and the creation and maintenance of capital stocks. While conservation of natural resources can lead to "strong" sustainability, what steps are needed for creating a greater SE?

The SE necessitates a re-creation of how communities are perceived endogenously and exogenously. A major aspect of this third economy is a re-imagining of what role local people can have in utilizing their assets as a means toward empowerment. Joy Emmanuel (2012a) discovered that the availability of social capital, population size, education level, employment, age, mobility and resource dependency are all influential aspects in this development.

Perhaps most importantly are major actors or leaders within a community how may be considered 'sustainable personalities'. Those associated with leadership qualities, agency or the capacity to plan and initiate action. Those with the capacity to act as critical nodes for bridging and linking community members, community groups and external sources of revenue and aid (Onyx & Bullen, 2000). These community characteristics are important assets, rudimentary for creating local social economy organizations (SEO) and the establishment of governmental policies, both of which are conducive to positive local SE developments.

As the welfare of local people and environments remains the focus of the SE, local economies are an intrinsic aspect. Mathie and Cunningham (2008) claim that the "initial impetus for organizing is to secure basic infrastructure and service delivery" (p.4). These interactions help to develop social capital as relationships are strengthened and the community is empowered through time. The local economy can be stimulated by endeavours of both individuals and the community.

The activities of SEO provide "services from education, to health, to housing, employment, training, personal support, recreation, legal counsel, and a vast variety of other services, as well as offering an array of goods" (Emmanuel, 2012b, p.31-32). The SEO are associated with community economic development (CED) activities such as: not for-profit (NP) organizations, social enterprise, co-operatives, mutual associations, credit unions, voluntary agencies, and various local development and community development schemes. These economic activities differ from the private and public sectors as they are mostly NP and democratically or collectively operated.

Despite generalized characteristics of SEO, it continues to lack a specific definition[40]. When researching SEO, few studies have utilized the same "mapping" tools[41] to identify which organization qualified under the third sector. One such tool developed in 2006 by Bouchard, Ferraton, and Michaud (2006), is quite well recognized internationally. The follow four criteria are used to identify whether or not an organization qualifies.

1. The organization must carry an economic activity,
2. The existence of social rules prohibiting or limiting distribution of surpluses among members,

[40] Even after the establishment of the Canadian Social Economy Research Partnerships (CSERP) in 2006, and "[d]espite successful regional cooperation among the research nodes, there is no common definition of the Social Economy in Canada; rather each node uses a distinctive local definition" (Tremblay, 2012, p.29)

[41] Mapping the SE is an initial stage in research that requires the identification of all SE activities within a particular region, determining their function, their assets and their status.

3. To have a formal voluntary association of persons and/or of collective bodies,
4. Democratic governance (Bouchard et al., 2006).

Organizations discovered to hold all of these criteria were considered "core social economic actors", while meeting some criteria made an organization of "hybrid components". A visual representation of which organizations qualify under the social economy called "The social Economy Quadrilateral" better details which organizations are core or hybrid (See Appendix 7: Who Qualifies).

To better understand SEO an examination of the most common and important organizations will follow: not for-profit (NP) organizations, social enterprise, co-operatives, and credit unions. NP institutions are sometimes referred to by various names[42]. Many organizations are considered NP and are major contributors to social capital and civil society. According to the Handbook on Non-profit Institutions in the System of National Accounts (2003) these SEO include:

> sports and recreation clubs, art and cultural associations, private schools, research institutes, hospitals, charities, religious congregations and faith[sic]-based organizations, humanitarian assistance and relief organizations, advocacy groups and foundations, and charitable trusts (as cited in Tremblay, 2012, p.24).

According to Hall, Easwaramoorthy and Sandle (2007) the Canadian NP sector attributes 8.5 percent of the GDP when the value of volunteer work is included. The 2003, National Survey of Nonprofit and Voluntary Organizations found nearly 161,000 non-profit and voluntary organizations in Canada employed over two million people, while contributing 112 billion dollars in revenue (Imagine Canada, 2006). Of this hospitals and places of HE contributed 75 billion dollars and employed 1.3 million. These organizations benefit from over two billion hours of free labour annually from approximately 19 million volunteers. This is "equivalent to

[42] Various alternative names for the Not for Profit institutions include: non-profit, voluntary, civil society and occasionally non-governmental organizations. These institutions are included in the third, voluntary, non-profit and/or independent sector (Tremblay 2012, p.22).

approximately one million full-time jobs" (Tremblay 2012, p.24). A highly revered NP SEO is the social enterprise.

Researchers agree that social enterprises are businesses who aid their communities (Emmanuel, 2012b). Elson and Hall (2010) describes them as a "business venture, owned or operated by a non-profit organization that sells goods or provides services in the market for the purpose of creating a blended return on investment: financial, social, environmental and cultural (p. 10). Emmanuel (2012b) believes that social enterprises act as a nexus in the relationships between individuals and communities. Their status as internal economic actors aids in the building of social capital and opportunities for community members. Tremblay (2012) states that SEO operate within the characteristics of the sustainable economy through the adoption of strict triple bottom line goods and services. Cooperatives are noted as particular in promoting this agenda.

Of all the social enterprises co-operatives are possible the most common. The International Co-operative Alliance (ICA) (2011a) describes these organizations as "businesses driven by values not just profit, that are equally owned and run by and for their members". They should adhere to this set of qualifying principles to be recognized as a true co-op.

1. Voluntary and Open Membership,
2. Democratic Member Control,
3. Member Economic Participation,
4. Autonomy and Independence,
5. Education, Training and Information,
6. Co-operation among Co-operatives,
7. Concern for Community (ICA, 2011b).

The Co-operative enterprises throughout the world are organized to benefit all involved equally. When they develop the capacity they are first to empower their members, then work collaboratively with other organizations to improve their causes. The positive contributions of

co-operatives include the "sustainable development of their communities through policies approved by their members" (ICA, 2011a). According to Dobrohoczki (2009) they should be considered public policy instruments for sustaining local communities (as cited in Tremblay, 2012). Credit unions are perhaps one of the most important forms of NP co-operatives for local development schemes.

Credit unions are associations that allow members to own their financial institution, while operating under the aforementioned principles of co-ops. A major benefit of credit unions is that they provide their members with greater levels of interest on savings, lower interest on loans, and lower banking fees. One of their main functions is utilizing pooled financial capital to develop other forms of community capital (i.e. helping to develop local businesses). According to the World Council of Credit Union's[43] (2012) *Statistical Report*, credit unions have had steady growth internationally, with a collective 101 countries, 55,952 credit unions, and greater than 200 million members. In Canada there are 771 credit unions with ten thousand members.

In Canada, there exists a strong focus on housing and worker co-ops. According to Emmanuel (2012c) the growth of worker co-ops is based upon the availability of financial capital, human capital, the concentration of co-ops by industry and a strong sense of internal solidarity. Noted co-ops include: successful co-ops for food security, fair trade, and local organic foods, worker co-ops in isolated regions and for marginalized peoples (in Canada indigenous and Québec have the highest percentages). According to the Co-operatives Secretariat of Canada (2004) the co-op sector provides significant contribution to the Canadian market, with over 160 billion dollars in assets[44], 160,000 employees, and non-financial co-ops attain annual revenues of

[43] The World Council of Credit Unions promote the sustainable development of credit unions and other financial co-operatives around the world to empower people through access to high quality and affordable financial services (Tremblay, 2012).
[44] This figure is excluding credit unions which according to the WUCCO are about 300 billion dollars in total assets.

29.5 billion dollars (Tremblay 2012, p.22). The continued growth of co-operatives as a business model can be associated to government commitments to regional economic growth and people's passion for SE development in Canada.

To comprehend significant occurrences in the recognition of SE throughout Canada, it is important to first examine the developments within Québec. In Québec the SE is embedded in a socio-economic transformation and where changes may provide landmark evolutions of the SE that enable opportunities the world over. Québec's SE is the oldest in Canada and more established than many internationally (it is globally renowned). In Québec, the *"L'economie Sociale*" has been a significant socio-economic and cultural institution that has influenced much of the province's history. To Mendell (2003) it is a "history of political alliances", where SE proponents have developed oppositional strategies that challenged existing institutions by establishing more functional ones, by creating "networks of engaged citizens who speak with one voice despite the many sectors they represent (Mendell, 2009, p.2). According to Lévesque (2007) the SE has been relevant in Québec since the 1850's, in large parts due to economic conditions established externally by British domination, internally by the Catholic Church, the growth of nationalism (i.e. Quiet Revolution), international economic crises, and most recently with the official recognition of the SE by the government (Tremblay, 2012).

The recognition of the SE by Canada is derived from increased attention to the sector and the expansion that followed. According to Neamtan (2003) in the late 1980's and 1990's the SE was rejuvenated in the Canadian policy paradigm. These policies helped to recognize the importance of social cohesion for a well-functioning market economy. From 1999 to 2005, thousands of SE enterprises were created alongside an estimated 20,000 new and permanent jobs (Neamtan, 2005). Cabaj (2004) found that by 2003 nearly 56 percent of the SEO who responded

to the study were created in the past decade and nearly 25 percent in the last three years (Tremblay, 2012). Mendell (2009) notes that from 1996 to 2006 over 750 million dollars were invested into SE enterprises from solidarity finances [45](p.48). With greater recognition from the 1980's, and continued expansion through financing and policy changes. The SE in Canada matured in the new millennium.

In 2003, SE organizations united to establish the Social Economy Initiative. In 2004, the federal government created a ministry position to focus on Canada's SE, and announced a 100 million dollar investment for capitalization of SEO (as recommended by Le Chantier), and 32 million dollars to capacity building, patient capital funds, and community-university collaborative research (Mendell, 2009, Tremblay 2012). The government claimed that it was

> determined to foster the Social Economy–the myriad not-for-profit activities and enterprises that harness civic and entrepreneurial energies for community benefit right across Canada. The Government will help create the conditions for their success, including the business environment within which they work (as cited in Tremblay, 2012, p.29).

In 2006, the Canadian Social Economy Hub (CSEHub)[46] was established to facilitate the Canadian Social Economy Research Partnerships (CSERP), a collaboration of regional research centres[47] that created opportunities and exchanges with other networks internationally. In Québec, 22.8 million dollars were given to two large labour solidarity funds (both members of Le Chantier de l'économie sociale). The provincial government contributed 10 million dollars to the Le Chantier's Trust.

Le Chantier and Le Réseau québécois de l'action communautaire autonome (RQ-ACA) are referred to as *apex organizations* due to their major influences in the development of the SE

[45] Solidary Finance is a financial system that contributes financing services to projects which create sustainable economic development and social integration
[46] CSEHub: http://www.socialeconomyhub.ca/
[47] Research Centres are located in: Atlantic Canada, Québec, Southern Ontario, Saskatchewan, Manitoba and Northern Ontario, Northern, and British Columbia and Alberta.

in Québec and Canada (both act as networking hubs for Québec's SEO). These two organizations have received core funding for the past decade, and act as key developers of the province's SE enterprises. These two organizations fulfil the roles of multi-stakeholder institutions, CED corporations and local development centres able to work with SE enterprises and providers of finance capital. The spaces they provide are essential for social capital enhancement between SE enterprises, investor financial institutions and the government. This makes financial innovation possible (Mendell, 2009, p.47).

Le Chantier's networks have increased the capacity of identifying the needs of the SE, while developing tools that aid in social innovations[48] and foster interactions between sectors. These actions have facilitated the introduction of policies within the province and in the city of Montréal (Ibid, p.46). Le Chantier has been a significant contributor to Québec's third economy. It has helped to facilitate greater financial opportunities.

Despite all the above-mentioned investments and positive attributes, significant strides are still required to boost the ability of actors in the SE. According to Mendell (2009) to enable positive outcomes requires the advance of institutional interplay and collaboration, the design of new instruments, addressing legal barriers through legislation, and public policy (p.46-50). SEO and government are devoted to the continued expansion and potential of this alternative economic sector that depends on stimulation through policy and capital support.

Tremblay (2012) discusses the importance of reforming governmental policies through the process of *co-construction* of public policy and its application or *co-production*. To have citizens actively participate in policy making with market and governmental sectors. Thus, "the

[48] Mendell (2009) notes how Le Chantier developed a "$53.8 million patient capital or quasi-equity fund to enable collective enterprises to embark on long-term planning, invest in real estate, and move out of a vicious cycle of debt…. repayable after 15 years" (p. 48)

democratization and enhancement of public policy requires participation by collective and individual stakeholders from the market and civil society in its creation (co-construction) and its application (coproduction)" (p.12). Much of this coproduction lies in the facilitation and promotion of resources for the SE. Here people must be empowered with services, jobs, and opportunities, many of which must be self-generated through local assets. Although the Canadian governments contribute plenty to its SE there remain opportunities for improvement.

The main objective of the 2011 International Forum on the Social and Solidarity Economy was to discuss reform of economic and social policy. According to the Caledon Institute[49] (2004) the "links between social and economic policy are vital to fight poverty, ensure social and economic security, and achieve social justice" (as cited in Tremblay, 2012, p.31). Moser (2007) brings to attention the need for social protection policies. This includes the creation of political space, and policies that minimize and provide incentives for taking risks towards generating greater community assets (as cited in Mathie & Cunningham, 2008, p.2). Of major consideration are the policies around investment in SEO.

Generally start-up funding is readily available, but sustainable long-term loans are absent. In an inter-provincial comparison of accessibility to financial aid for social enterprises Elson, Gouldsborough, and Jones (2009a) describe access to capital in Québec as robust, with easy access to greater degrees of financial support, while in Ontario, getting financial aid is anywhere from difficult to complex (Tremblay 2012, p. 17). Even though access to financial capital may be easier, policies are still needed on investments for solidary finance which is still a work in progress in Québec (Mendell, 2009; Tremblay, 2012). Most available loans are still limited to an organizations start-up. In most places the solidary financing still places SEO in the same debt scenarios as for profit companies. This either acts as the detriment or severely limits the potential

[49] Caledon Institute: http://www.caledoninst.org

of SE NP organizations that usually pay greater expenses to perform under high ethical principles (Mendell, 2009). The implementation of SE developments may be difficult when the other two economic sectors do not support them, or are too chaotic/unpredictable to establish stabile growth environments. In the instance of SE enterprises "policies that value social enterprises for their market values are likely to force practices that could compromise the core mission... to tackle social disadvantage and meet social needs" (Amin 2009, p.17).

As the social pillar of sustainable development (SD) involves progressive advancement toward international equity and fairness for all people, focus on local development and educations in the SE is becoming increasingly relevant. According to Elder (2008) among the novel initiatives recently emerging at some HEI is the integration of education, research and outreach –three major functions of contemporary universities –through social experimentation based on collaboration with various types of stakeholders. However, only rarely do universities and their surroundings communities collaborate closely to initiate integrated approaches to sustainability, despite huge opportunities for mutual benefits (Yarime & Tanaka, 2012, p.75). Providing educations in the SE while integrating research and outreach with more local community development projects (such as ESEE) and community-centric organizations and businesses, could offer advantages to a HEI ESD.

Studies of the SE can promote community university partnerships, and provide students with opportunities to engage in participatory action research. In Canada, SE Community University Research Alliances (CURAs) involved 79 universities and more than 140 community organizations. The research spanned 17 university departments demonstrating the how multi-disciplinary SE research and development can be. The research is exploratory and innovative as it is an emerging field (Emmanuel, 2012a, p. 13). Joy Emmanuel (2012c) explains that the new

tools applied in community-university partnerships have academics involved with direct impact, and the "focus of the work arises directly from the lived experiences – and challenges – of community organizations" (p. 55).

The Social Economy as an institution is experiencing great strides and innovations, with plenty of opportunity for research and policy development. Emmanuel (2012b) states that the SE in Québec is a movement able to challenge the prevailing economic model. That although SEOs may be small they make up for it in quantity, as SEO have a drastic impact on regional employment. In the local context Montréal's SE enterprises generate over 2 billion dollars annually, engage over 100,000 volunteers, and employ over 66,000 people (Emmanuel, 2012a).

Sustainable Higher Education

While universities specializing in conservation and climatology have been at the forefront of sustainability, international treaties for sustainability in higher education have since the 1990s helped to display HEI devotion to developing both more environmentally friendly campuses and educations in sustainable development. The United Nations has been a major proponent of various sustainable initiatives, such as the Decade of Education for Sustainable Development (2005–2014), and the Regional Centre of Expertise on Education for Sustainable Development designations. However, despite these initiatives there remain impediments. Supporters note how education, research, outreach and partnership, and sustainability on campus are the four strategies used in higher education institutions around the world for achieving sustainability (Velazquez et. al., 2005). Sustainability is becoming a marketable factor of HE, as an important factor for students' choice of which school to attend (Sherman, 2008; Seltzer, 2012), but may diminish the importance of academic excellence as well as free and critical thinking (Williams, 2010).

These sustainability factors affect reputational and prestige status, and may become new proxies to affect HE ranking. Already sixteen different sustainability self-assessment rating systems have been established to help HEI understand how sustainable they have become. In North America, the Sustainability Tracking Assessment and Rating System (STARS®) promotes change based upon an institution's reflection of how sustainable its education and research, planning, administration and engagement, and operations are. The publication of this rating acts to boost the reputation of an HEI (STARS, 2012) and can affect how it ranks.

Sustainability in Higher Education and Educations in Sustainable Development

The United Nations (UN) influence on sustainability in higher education (SHE) is paramount to understanding how it has proliferated and entered the educational systems internationally. In 1990, The University Leaders For A Sustainable Future (ULSF) was the first organization to address SHE with the Talloires Declaration. They asked for a commitment to SHE and created a ten-point action plan for incorporating sustainability and environmental literacy into all aspects of HEI. "To date it has been signed by more than 429 university presidents and chancellors in more than 52 countries" (Seltzer, 2012, p.9). In 1992, the UN's Agenda 21 requested that education in sustainable development (ESD) be incorporated into curriculum globally. Universities have been striving to make it evident in all aspects of policy and practice (Williams, 2010, p.72). Influenced by the UN, Stockholm University developed *The Copernicus Charter* in 1993 "to promote the practice of environmental ethics in society. "Signatories agreed to focus on the triple bottom line of sustainable development" (Williams, 2010, p.71).

However despite these policies for SHE there remains some obstacles to its development. Perhaps institutions cannot devote to long term sustainability changes with short term financial

restrictions, or perhaps the financial capital benefits and implications are viewed as insufficient. Velazquez *et. al.* (2005), discuss eighteen impediments to SD on campus, the top five mentioned are:

- Lack of awareness, interest, and involvement,
- Organizational structure,
- Lack of funding,
- Lack of support from university administrators,
- Lack of time (p.385).

Although development is slower than anticipated and HEI may need to invest more in SHE, sustainability is still becoming a major factor in education around the world. "In 2008, 653 college and university presidents in the US committed to make 'sustainability a part of the curriculum' within two years" (Williams, 2010, p.72).

In 2004, the UN established the Decade of Education for Sustainable Development (2005–2014) (DESD), while the United Nations Department of Economic and Social Affairs and the United Nations Educational, Scientific and Cultural Organization (UNESCO) developed an international implementation scheme. With a greater focus on education in sustainable development ESD, the DESD's objectives are "the development of knowledge, skills and values that empower people to take responsibility for creating a sustainable future" (Wigmore & Ruiz, 2010, p.36). Wright (2002; 2004) notes that common themes in the aforementioned declarations involve; sustainable physical operations, sustainable research, public outreach, interuniversity cooperation, partnership with government, nongovernmental organisations (NGOs) and industry, ecological literacy, developing interdisciplinary curriculum, and moral obligation. Cities and schools that are found exceptional may be designated by the UN as a "'Regional Centre of Expertise on Education for Sustainable Development'…and receive a concomitant flow of cash it has become a badge of honor as well as a unique selling point" (Williams, 2010, p.73).

Exceptional educators in the field are bound to increase reputation though recognition of innovative accomplishments.

Sustainability is not just another issue to be added to an already overcrowded curriculum, but rather can be a gateway to a different view of curriculum, pedagogy, organizational change, policy, and, in particular, ethos (Sterling, 2004). According to Valazquez *et al*. (2005) education, research, outreach and partnership, and sustainability on campus are the four strategies used in higher education institutions around the world for achieving sustainability. The sustainability focus is becoming a marketable factor of HE and is receiving attention. The University of British Columbia (UBC) is noted by Luna *et al*., (2012) as exemplary in the integration of ESD into the curriculum. UBC aims for its graduates to demonstrate their sustainable attributes:

- Holistic systems thinking,
- Sustainability knowledge,
- Able to integrate this knowledge across intellectual constructs,
- And act to create positive change (UBC, 2011) (see David Orr, 1991).

Williams (2010) is quite discontented with the role sustainability in higher education (SHE) has taken. His belief is that sustainability focus has diminished the importance of academic excellence as well as free and critical thinking. In the UK, the Green League ranking provides substantial increases in an institution's reputation. Williams states that "[t]hose that flourish in the sustainability agendas are more likely to be institutions struggling to prove their place in the academy, typically new universities, and former polytechnics" (p.72). Perhaps this is due to their inability to compete against elite school's R&D, reputation and prestige.

The level of sustainability reached by places of HE is becoming important factors for students' choice of which school to attend (Sherman, 2008; Seltzer, 2012). Seltzer (2012) discusses three main characteristics that should sway the ecologically concerned student's choice, "1) A healthy and sustainable student campus life; 2) preparation for employment in the

green economy; 3) the environmental responsibility of policies" (p.7). These aspects are becoming more important for HEI to examine and improve. The UN has engaged SHE and now "there is a new priority for a whole generation of leaders, educated and trained, to make a greener world now" (Seltzer 2012, p.9). Providing 'green' education is becoming more of a priority at universities, as key members of the KE they too are becoming essential players in the economies based upon SD. Innovations and new knowledge are noted to develop more for new fields (Mosey *et al*., 2012) and SD is just that. As competition to improve factors that influence an institution's position in the HE marketplace is serious business. The position a university holds in the marketplace may determine the investments received, its economic outputs and its competitive advantage. Focus in SD and SHE may provide a boost for HEI ranking.

Assessing Sustainability in Higher Education

Brezis (2012) believes new ranking methodologies and proxies will be developed (p.159). Sustainable development may become a proxy to affect HE ranking. Sustainability is not included in conventional university ranking systems, which according to Yarime and Tanaka (2012) makes SD in HEI slower to implement. The ranking and assessment systems are increasingly influential in guiding the activities of HEI. If sustainability in higher education (SHE) and ESD can affect reputational and prestige status and can be incorporated into major ranking publications there would be a significant pressure towards transformations in a sustainable direction (Yarime & Tanaka, 2012, p.64).

Although sustainability has not become a specific criterion of the most recognized educational ranking systems, assessment rating systems are becoming more important as a driving force for SHE (Yarime & Tanaka, 2012, p.74). A major difference between rating and ranking is that "rating refer to levels of achievement rather than a numerical score, and rating

systems are conducted internally while rankings are conducted by a third party" (Wigmore & Ruiz, 2010, p.29). These self-assessments serve to help understand how sustainable an institution has developed in relations to objectives, to identify areas and develop strategies for improvement, and to help foster a culture committed to sustainability (Yarime & Tanaka, 2012, p.65). As mentioned earlier, education, research, outreach and partnership, and sustainability on campus (governance and operations) are the strategies used in higher education institutions around the world for achieving sustainability (Valezquez *et al*., 2005) and assessment tools utilize these indicators. Yet criteria for education, research and outreach activities are not considered appropriately by these assessments.

> As activities for sustainability increasingly involve inter-/trans-disciplinary cooperation and close collaboration with diverse stakeholders in society, it will be of critical importance to develop and implement concepts and methodologies for conducting comprehensive, long-term and integrated assessment of research, education and outreach (Yarime & Tanaka, 2012, p.63).

However, most sustainability rating tools address important criterion such as:

> creating policies, strategies, planning, initiatives and visions. Continued monitoring, investigating, auditing, assessing and surveying are notable criteria in most assessments. Important sustainable aspects in finance usually require examination also; this includes investments, budgeting, and funding. The tools however tend to neglect faculty development in sustainability areas, the implementation of policies, the level of stakeholder involvement in decision making and emergency plans (Yarime & Tanaka, 2012, p.73)

It is believed that assessment tools will have to create criteria that address new activities that do not belong to the environmental management of infrastructure (Yarime & Tanaka, 2012). There are currently sixteen different SHE assessment tools. In North America the Sustainability Tracking Assessment and Rating System (STARS®) is the assessment tool most applied.

STARS is the most prominent North American sustainability rating system for HEI. It was developed by the Association for the Advancement of Sustainability in Higher Education's (AASHE). Wigmore and Ruiz, (2010) believe that

> STARS addresses all dimensions of sustainability, including health, social economic and ecological factors, which encompass all sectors and functions of a campus, such as curriculum, facilities, operations and collaboration with community (p.29).

As the premier North American sustainability rating system, both Canadian and American schools can submit their self-assessments, and decide whether or not to be given a STARS rating. The rating system offers universities and colleges multiple benefits and opportunities to benefit their sustainable develop initiatives. The STARS program provides those interested reasons to participate.

1. *Earn recognition*. As the "most comprehensive and transparent campus sustainability measurement system available", completion of the STARS will enhance the reputation of the institution. The Stars rating can be used to display a schools leadership in sustainability (Wigmore, & Ruiz, 2010).
2. *Save time and money* in developing a sustainability report or plan.
3. *Streamline reporting*: AASHE is collaborating with other sustainability rating systems (i.e. "The Princeton Review, Sierra magazine, and... the Sustainable Endowments Institute") (STARS, 2012), and can share information provided to them.
4. *Helps to set goals and generate new ideas,* by determining strengths, and the improvements required for an institution's sustainable strategy.
5. The program *encourages intra-campus collaboration* and consolidates all sustainability groups and actors in one place.
6. STARS can act as *a teaching and learning tool*, and provides an educational opportunity for community members. It can help foster a stronger, more diverse sustainable school community.
7. It is encouraged to provide feedback to STARS to help improve their rating system, which implies that the evaluation system will become more vigorous in the future.

The STARS rating system transparency provides participating HEI an opportunity to "benchmark with peers" which allows them to share and compare policies, objectives, and actions that have led to best practices (STARS, 2012).

Wigmore and Ruiz (2010) believe that a rating system promotes change more effectively than ranking systems, as change is dependent on the organization's own will rather than the competitive spirit. In ranking schemes there is a lack of transparency for how points are delegated and top positions are always filled, whereas the STARS point system is transparent and top levels of achievement may not be fulfilled by anyone. Appendix 8 shows that although there were 244 submissions in 2012 and 19% of schools received gold status, none were able to attain platinum -- the highest rating. Appendix 8 shows where achievements are mostly accounted for by institutions (See Appendix 8: Stars Ratings 2012). Appendix 9 shows the credit system for the new STARS framework, comparing the two demonstrates that SD of OP or operations on average is the least point garnering aspect, although every area requires improvements. With 85 credits required to receive a platinum rating the opportunity to become the first platinum North American university or college will garner it publicity (See Appendix 9: STARS Credit Checklist) (STARS, 2012).

STARS is based upon an institution's reflection of its SD in education and research, planning, administration and engagement, and operations. Planning, administration, and engagement, stand as major drivers for SD and ESD in HE. Long-term strategies, policies and regulations are supposed to act as catalysts to enhance rating and ranking. HEI apply isomorphic mimicry to following leaders and to maintain competition with institutions of similar caliber, while benchmarking actions advance them above and beyond. Perhaps accessing these unknown potential innovations lie within education and research? ESD not only engage students interested

in working within burgeoning sustainable economies, it provides HEI with chances to impact the KE with graduated professionals and focused professors, while innovations in these fields will enhance rating and rank. Here the GE fosters patients and intellectual property rights on technological advances, economic synergy, and new companies, while the SE provides HEI with outreach, partnership, community engagement opportunities, new companies and generate citizen commitment to the academy. STARS can act as the starting point for SD and ESD and support great changes and benefits for institution's rating and ranking.

Conclusion

The university and other institutions of HE follow trends in the global economy to augment their ability and efficiency to deliver goods desired by society. Although the neoliberal agenda has replaced ideal missions with goals and reduced the social sustainability of HEI governance through the switch from soft to hard managerial system, HEI are still maintaining their most intrinsic function of providing education. The quality of the education is an extremely important aspect of how institutions are ranked in the global system. The ability of HEI to provide society with financially valuable innovations, leaders, and researchers determines how great an impact they can make on the knowledge economy.

Sustainability is proving to be a more important issue for humanity and HE than it ever has before. As climate change, resource extraction and pollution continue, establishing the means for social, ecological and economic sustainability through society's actions are of paramount importance. While solutions lie in designing more resilient SES, modes of governance, jobs and technologies, education and ecological literacy are becoming a driving force.

As international organizations and treaties promote SHE it is becoming an important selling point for institutional leaders. The ability of a HEI to adopt sustainability into their

pedagogy, research, operations, administration, engagement and outreach, may be an influential aspect of a student's university or college choice. The establishment of greater levels of ESD and SHE, necessitates the greater importance of rating systems such as ASSHE's STARs assessment.

Already hundreds of HEI are racing to become more sustainable. The GE and SE are two particularly important aspects of the SD. The skills required to engage these burgeoning economies offers unique opportunities in education, and potential innovations could be globally significant with irrefutable market value. Governments and corporations throughout the world are funding educations and institutional improvements in these areas already. In Québec the focus still remains on science, product design, TEI and energy efficiency of institutions, while ecologically focused social economic enterprises (ESEE) and other SE activities are receiving greater publicity.

ESEE are possibly the most sustainable new or alternative development because of their focus on local economic developments and initiatives, empowering its members to be more inter and independent, and engaging and acting in an environmentally friendly manner. ESEE are mandated to invest only in like-minded initiatives, while receiving aid from both the governmental and corporate sectors to boost the position of the SE. As ESEE endeavour to generate lasting aid and benefits for local people, capitalist firms under neoliberalism could deter their missions in a fashion similar to HEI.

As ranking remains an important aspect of financial gains for a HEI it is important that these institutions understand their positions, how they can improve their branding strategies to satisfy their clients and improve their reputations and prestige. I believe that integrating ESD into curriculum or research groups, in the form of interdisciplinary work applied to GE and SE paradigms is a direction HE should take in order to become an actor and leader in the growing

sustainability knowledge economy. Innovations could help launch new technological and social developments, and devise systems of greater energy efficiency and cost savings for institutions and people globally. Facilitating applied student research and development could increase an institution's prestige. The university could promote alternative systems that augment its sustainability rating, reputation and consequently its ranking. By providing the university community with sustainable changes they want to see, the university will maintain some democratic traditions and can begin the process of achieving platinum ratings of sustainability.

I believe that if administrators better understand the influential role sustainability can have on ranking, there will be a faster adoption of ESD and SHE. I believe that the "university should consciously shape itself as a model of planetary sustainability" (M'Gonigle & Starke, 2006, p. 83). Attaining this goal demands great personal and professional investment by those most able to affect HEI.

Methodology

The purpose of this research is to discover the positions and opinions of Concordia University administrators in regards to the questions: *how much does sustainability in higher education, and education in Sustainable development (SD) impact prestige, reputation, and rank? Why and how does Concordia University want to pursue SD?* The research methodology is qualitative in terms of its case study research design. Qualitative research is based upon an interpretivism epistemology and utilizes the inductive approach[50], where data collected will help to formulate a theory. Ontologically the research is based upon constructivism, that social reality is subjective and constructed by our actions (Bryman, Bell, & Teevan, 2011).

Critics of qualitative research specify concerns over its subjectivity, the difficulty in replicating research, and its lack of transparency. In this case study, semi-structured interviews will be the main research tool, an approach that has been criticised for lacking the reliability and validity found in quantitative research designs (Bryman, Bell, & Teevan, 2011).

However, the benefits of qualitative research include: the ability to ask questions about non-observable occurrences, the ability for interviewees to reconstruct events and relate future plans, it reduces the reactive effects due to the researcher's presence, it is less intrusive, it facilitates longitudinal research and it is better situated for confronting specific issues. (Bryman, Bell, & Teevan, 2011).

The bulk of the research will be derived from in-depth interviews based upon semi-structured interview guides (See Appendix 10: Semi-Structured Interview Guide) with many top administrators and those that influence sustainability at the university. Their opinions and ideas

[50] Epistemology questions what can be known and how knowledge can be acquired. Interpretivism is when it is the role of the researcher to extrapolate the subjective meaning of people's actions. Induction states that knowledge may be derived from the collection of information which may be used to establish a generalization (Bryman, Bell, & Teevan, 2011, p. 7-9)

of the impact of ESD and SHE on brand will provide insight into where and how Concordia may pursue future sustainable developments. The interviews lead to important university documents, such as strategic development plans, economic impact studies, and student satisfaction surveys. These will be compared and contrasted with materials published about Concordia University online, as well as the content of its official marketing campaigns.

Research Design

This thesis employs the case study research design. A case study is defined as "[a] research design that entails detailed and intensive analysis of either a single case or (comparative purposes) a small number of cases" (Bryman, Bell, & Teevan, 2011, p.367). Yin (1994) states that case study research design is beneficial for *how* or *why* questions dealing with contemporary real-life phenomena in a specific context. Case studies allow for the triangulation of various informative data sources, the results may be compared and contrasted and a theory may be extrapolated.

As a qualitative research project the main methodological tool employed in the design is the semi-structured interview. This research necessitates the interaction of the researcher and the administration of Concordia University. Actions consist of in person semi-structured interviewers with key administrators. The secondary tool will be the examination of university documents stressing strategic planning of the HEI in question. The research will be more acceptable across paradigms by triangulating relationships between variables (i.e. administrator opinions and university documents) (Bryman, Teveen, & Bell, 2009). This type of comparison aids in maintaining higher conformability and completeness (Tobin & Begley, 2004).

Semi-structured questions asked to interviewees include: values, beliefs, behaviours, formal and informal roles, relationships, places, emotions, encounters and stories (Bryman, Bell,

& Teevan, 2011, p.171) that are addressed by following an interview guide. In such an interview "the researcher has a list of questions or fairly specific topics to be covered, often referred to as an interview guide, but the interviewee has a great deal of leeway in how to reply" (Bryman, Teevan, & Bell, 2009, p160). Flexibility in communication strategy provides greater flow in conversation and ideas with respondents. Flexibility allows subjects to describe events and issues that they consider important rather than being limited to preconceived options developed by the researcher (Bryman, Bell, & Teevan, 2011). The aim here is that subjects' responses generate new hypotheses about sustainability at Concordia and universities in general.

Apart from flexibility there are several advantages to semi-structured interviews. Schoenberger (1991) writes that interviews in general are useful for understanding the rationale guiding people's choices while taking into account context-specific information. Compared to surveys interviews can also provide a better understanding of the causality behind subjects' actions. While surveys can reveal reasons behind actions or opinions, interviews can isolate exactly the rationale behind them. Another advantage includes ensuring that interviewees understand the questions. Intellectually engaging participants through the in personal interview helps to acquire more exact responses through comprehension of the researcher's true goals and interests. These interviews may also reveal social relationships and struggles in regards to the dynamics of the HEI.

Like all research methods semi-structured interviews are imperfect. There is a risk of 'leading the witness' (i.e. eliciting the expected answer from the subject) by asking poorly formulated questions or even with body language. However, open-ended questions reduce this risk. The researcher may also distort responses by over-emphasizing sections of the interview and misunderstandings or differences in interpretation are possible (Schoenberger, 1991). Finally,

the time involved in the interview process and transcription necessitates a relatively small sample size compared to surveys.[51] It cannot replace the benefits of ethnography: interpreting the world as the interviewees do, social and professional dynamics are more likely be taken for granted, deviant and hidden activities are less observable, single interactions reduce the ability to connect behaviour and context, and it reduces naturalism by conducting interviews which take from the context of everyday interactions (Bryman, Bell, & Teevan, 2011).

The list of departments and administrators contacted for interviews include: Bram Freedman the VP Development and External Relations and Secretary General (VPE-SG), Roger Côté the VP of university services (VPS), Dr. Peter Stoett tenure professor of political science, director of the Loyola College of Diversity and Sustainability, named Sustainable Fellow by the Provost, Co-chair of education in sustainability (CCES) of the Sustainable Governance Framework (SGF), Philippe Beauregard the Chief Communications Officer (CCO), Sami Antaki Executive Director of University Communications Services (DUCS), Pietro Gasparrini Director of Environmental Health and Safety (DEHS), and Andrew Woodall the Dean of Students (DOS) (see Appendix 10: Semi-Structured Interview Guide). While semi-structured interviews are the primary method of information gathering, a collection of official university releases may aid in discoveries and development of theories. These releases include articles about university policies, conduct, outreach, development and marketing strategies. The degree to which Concordia University is devoted to SD, SHE and ESD in these strategies will be explored.

[51] In this thesis, I have tried to overcome some of these limits by cross-checking the interview data with written documents about university strategic plans for development and action.

Research

The research was conducted in the autumn semester of 2014 at Concordia University, Montréal, Québec, Canada. The research will be structured in a fashion that emulates the layout of the literature review. The ranking of the university is dependent upon a variety of factors. Prestige, reputation, and rank are all closely related elements that can reflect the outputs and developments of a university. Enhancing "reputation involves transitory aspects of opinions and the experience of prior students, while prestige involves more durable attributes, mainly: student quality, research activity, and sports success" (Paul, 2005, p.113). Prestige is believed to be more influential in ranking systems than reputation (Brown & Mazzarol, 2009). However, both are influential in determining a university's rank.

The factors that define Concordia and the Concordia experience are important areas to take into consideration when considering what affects its rank. Concordia's socio-political landscape will be examined. The university's mission is compared and contrasted to branding and advertisement campaigns. Development plans are examined for their contributions to maintain Concordia's mission, vision or goals and values. Concordia's impact on the knowledge economy is duly noted. An assessment of the university's current sustainability status, initiatives undertaken for ESD and SHE, in combination with more in depth examination of the relationship between branding of sustainability at Concordia University. The research applies the opinions of administrators, developers of ESD, university communications and those involved with the operation, management and improvement of Concordia's educational environment.

Socio-Economic Scenario

Québec and Post-Secondary Education

Québec is the only official French Canadian province and maintains the second largest population (8 million inhabitants). Of its citizens only 22.3% recognize English as a first language and rates of bilingualism continue to increase (Industry Canada, 2013). Compared to the rest of Canada, Québec maintains a unique history and higher educational system.

In 1867, the British North American Act created laws that made provinces and territories responsible for the educations of its citizens. The federal government however still contributes financially in the support and development of post-secondary education. In 1951, university and colleges were directly given grants from the federal government, but the Québec government had educational institutions reject them and instead increased provincial funding to HE. In 1959, these funds Québec accepted the contributions in the form of tax abatements and applied them wherever the provincial government desired. At this time the demand for education was outstripping the estimated costs for programs, so the province instituted a unique system to increase access to post-secondary education. High school education was capped to eleven grades, and a free public collegial system known as Cégep[52] was developed. They continue as free HEI offering two year pre-university programs (that provide graduates a year's worth of university credits in their discipline) or three year career programs. Cégeps exists amongst private career focused colleges.

In the 1970s the federal government capped the growth rate of HEI arbitrarily at 15% per year and began reducing funding for postsecondary education (Jones, 1997, p. 15). All the

[52] Developed during the Quiet Revolution (1960s), Quebec identified access to education as a major issue in higher education; the population in Québec increased by close to 30% between 1951 and 1961 (Jones, 1997), they created a free, a unified college sector (Collèges d'enseignement général et professionnel (CEGEPs)

Canadian provinces except for Québec forced students to pay higher tuition fees to make up for the loss (Jones, 1997). Québec continues to provide accessible HE and the province maintains the lowest tuition fees for in-province students in Canada (Asselin, 2012), but it ranks last in both per tuition grants and net tuition revenue (Council of Ontario universities, 2012). The lack of revenue is considered detrimental to the post-secondary system in the province.

Québec Universities are funded by FTE's (Full Time Equivalencies), which are made from thirty course credits. Also different programs of study provide the universities with different amounts of funding. Concordia University operates with a large student population, in 2012/13 there were approximately 43,847 students (Concordia University, 2015a). FTE represent around three-quarters of its population[53]. The VPE-SG notes that the precarity of the funding situation, as "every year Concordia has to generate more revenue, meaning more students, which is not a long-term sustainable financing".

From 1990 to 1994 Québec tripled the price of tuition to $1668 because of universities running high budgetary deficits, and again from 2007-2011 by $500. According to the Conférence des Recteurs et des Principaux des Universitiés du Québec (2013), otherwise referred to as CREPUQ, Québec's universities are underfunded 850 million dollars annually in comparison to those in other provinces. In 2011 plans were developed to bring Québec's tuition to rival those in other provinces from $2,168 to $3,793 over a five year period (Asselin, 2012). The province stated that,

> [i]t is important for the government that students pay their fair share of the university funding plan. However, the government has sought to make sure that the tuition fee increase defined for that purpose will be managed and limited (Finance Québec, 2011, p.20).

[53] 28,684 FTE students in 2012 (Concordia University, 2012)

From March 2011, this plan was met by a series of disruptive student strikes that operated under the same ideology that prompted the province to establish its unique HE system, that access to higher education is a public right not a private good. The traditional missions of HEI everywhere were for the public good, for accessible education and to empower people and communities (M'Gonigle & Starke, 2006). The student strikes lasted one year and resulted in the freezing of tuition rates and proposed tuition increases.

Starting in 2012, the provincial government announced the need to reduce funding to HEI and other public services. As of 2014, 2.3 billion dollars in cuts were announced to help reduce its 3 billion dollar deficit, with 51.3 to 151.6 million dollars[54] in savings from universities. Concordia University President identified 13.2 million dollars in cuts in the operating budget for both 2012-13 and 2013-14 academic years. In 2012-2013 Concordia was allowed to run a 6.4 million dollar deficit (McCarthy, March 2014), however for 2014-2015 it was un-allowed to run an expected 2.5 million deficit. The university faces 15.7 million dollars in cuts with a potential additional reduction of 1.5 million dollars (Sheppard, November 2014). To combat this reduced budget the university devised a voluntary departure program. The university asked employees to depart from their positions to save the university money. Of an expected 180 departures only 90 people took the departure settlement package, additionally cuts were made in support staffing and in additional places (McCarthy, 2014).

Interviewee's exclaimed concern that the lack of funding in Québec, could lead to a decline in prospective students if facilities begin falling behind other HEI. Starting in 2008, the province de-regulated undergraduate costs in administration, law, pure sciences, mathematics,

[54] Concordia itself is facing a budget reduction of 15.7 million dollars annually. For 2014-2015 The university is projecting total revenues of 394.8 million dollars and total expenditures of 397.6 million dollars, resulting in a deficit of 2.8 million dollars in 2014-15 (McCarthy, 2014).

engineering, and computer science for international students (Gouvernement du Québec, 2014a). The CCES lamented that if rates for international students becomes equivalent to other higher ranking HEI it could reduce their continued attendance which would be dangerous as Concordia relies on its internationally diverse identity. The VPE-SG stated that Concordia will maintain the costs for international students at least for the 2014-2015 academic year. Already the prices for international students far outweigh the costs for Canadian Residences and citizens of Québec from double to triple the cost depending on post-secondary level and school of choice (See *Table 1*). In 2012-2013, 14.4% or 6,300 of Concordians were international students, with major representation from China, India, France, Iran, and America, with observable educational preference by nationality (Concordia University, 2015a).

2014-2015 Concordia University Tuition Fees for 30 Credits or FTE	
Canadian Student Fees	Foreign Students Fee
$2,273 - $6,632	$12,726 - $17,126

Table 1. Source (AUCC, 2015).

The interviewees were asked whether the Québec government's regulations enhance or impede upon Concordia's reputation. The general consensus was that it is an impediment. The student strikes helped to attract and detract particular prospective students, but they ultimately damaged the reputation of Québec's HEI externally. The CCES noted how the funding realm has been difficult for years and that freezing tuition is hurting Québec's HE. Funding may become more dependent on private sector investment where possible (i.e. engineering), while remaining more difficult in the humanities where Concordia is augmenting its ESD.

On the regulation side government reporting was deemed potentially valuable for both parties. However, its mismanagement is believed to negate such benefits. The government was said to respond only to negative press to protect their reputation, while no credit is given to HEI that comply with regulations and reporting schemes or achieve national recognition. Concordia

although recognized receives no benefits from Québec for being the most energy efficient institution for 8 consecutive years or for being one of few HEI to not run a deficit.

In terms of sustainability, Québec is renowned internationally for green economy industries such as Hydro-Québec. A company that produces and consults on the development of largest hydro-electric dams in the world. Québec is also well known for its social economy activities because of community financing entities such as Caisse Desjardins. Beveridge, McKenzie, Vaughter and Wright (2015) discovered that the provincial context strongly influences the sustainability actions of post-secondary institutions. Québec's HEI have the highest rate of sustainability initiatives compared to all other provinces and territories. The study noted the "existence of sustainability-specific policies was strongly related to province, with Québec leading at 85%, followed by British Columbia at 67%. While 30 post-secondary institutions are labelled as leaders for undertaking four major developments[55]: six are Québec Cégep and four Québec universities. Seven are based in Montréal and Concordia is one (Beveridge, McKenzie, Vaughter, & Wright, 2015).

Montréal, Concordia, and the Knowledge Economy

Montréal is a cosmopolitan with international renown, maintaining a rich history as one of North America's oldest cities. It is Québec's largest city and the second most populated city in Canada with 3.8 million residents. For most of Canadian history it served as its major economic hub until it was surpassed by Toronto after a recession that began in the 1980s (Ville de Montréal, 2015a). The city is hosts innovative leaders in gaming, new media, and entertainment industries; while boasting international prestige in the arts and design. In 2006, it was recognized

[55] (I.e. The undertaking of a sustainability assessment, the signing a national or international environmental or sustainability declaration, having a sustainability office or officer, and having sustainability polices (Beveridge, McKenzie, Vaughter, & Wright, 2015).

as a UNESCO City of Design. The city is a world leader in clinical and medical research, and engineering in aerospace technology.

In terms of sustainability, Montréal was the first French language city to be recognized by the United Nations University as a Regional Centre of Expertise on Education for Sustainable Development in 2007; coinciding with the UN Decade of Education for Sustainable Development (2005–2014). Initiatives include promoting eco-citizenship and sustainable development, working to consolidate the expertise and resources of several formal, non-formal and informal educational institutions, and engaging in its 2010-2015 Community Strategic Plan for Sustainable Development (Ville de Montréal, 2015b). Its sustainability initiatives helped it to become one of five cities to host the *Future Earth* initiative (discussed in depth starting page 103). Montréal is a hub of HEI and SHE.

Concordia University is one of eight universities in the city. It is a young comprehensive university at 41 years, established in 1974 through the merger of the Loyola College (circa 1896) and Sir George Williams (SGW) University (a chartered University since 1948). The institution's campuses are 7 kilometers a part, Loyola in the Montréal West area, while the SGW is located in the Ville-Marie borough – Canada's most densely populated downtown-core. Concordia is one of two English language universities in Montréal, Québec. The other is McGill University one of Canada's oldest and top ranking HEI in the medical doctoral category (see Appendix 11: Canadian University Rankings and Sustainability Rating). Montréal also houses six French language universities: four under the Université du Québec branch of ten provincial schools Université du Québec à Montréal (UQAM) a comprehensive university, École de technologie supérieure (ETS) an engineering school, École nationale d'administration publique (ENAP) a public administration school, Institut National de la Recherche Scientifique (INRS) a graduate

school for scientific research, The Université de Montréal (UdeM) a medical doctoral school, with its affiliated schools the École Polytechnique de Montréal an engineering school, and HEC Montréal – (École des Hautes Études Commerciales de Montréal) Canada's second oldest business school, and Université de Sherbrooke's campus in Longueuil (Montréal's South Shore).

As a growing educational force in the city of Montréal, Concordia University maintains its relationship with the city and province to prolong both their continued prosperity. Concordia provides academic programming for future leaders in all of the city's vibrant economic activities, offering many experiential learning opportunities for students in these sectors, while its "Researchers partner with the private, public and not-for-profit sectors on a multitude of exciting

Table. 2 Concordia's Infrastructural Growth.

Year	Development	Eco Highlight
1974	Loyola College and Sir George William Merges	N/A
1992	J. W. McConnell Building	N/A
2001	Jesuit Residence (Loy)	N/A
2003	Sports Field Upgrade (Loy)	N/A
2003	Richard J. Renaud Science Complex (SP)	N/A
2004	Grey Nun's Purchase & renovations	N/A
2005	Engineering and Visual Arts Complex (EV)	N/A
2005	Communication Studies and Journalism Building (Loy)	N/A
2005	Henry F. Hall Building Renovations	Escaladers, Elevators
2005	Acquisition of TD Bank Building	N/A
2005	Vanier Library Extension (Loy)	N/A
2006	Jesuit Residence Renovations (Loy)	N/A
2008	Loyola Composter (Loy)	Waste Reduction
2009	Stinger Dome (Inflatable Sports Field Structure) (Loy)	N/A
2009	The John Molson School of Business	LEED Silver
2010	Completion of Quartier Concordia	N/A
2010	Underground Tunnel Metro to Library	None
2011	Centre of Structural and Functional Genomics (Loy)	LEED Gold
2011	PERFORM Centre (Loy)	LEED Gold
2012	Guy-Metro Building Façade Upgrade	35% more efficient
2012	Theatre and Arts Department MB Renovations	N/A
2014	Vanier Library Renovations (Loy)	N/A
2015-2017	Webster Library Renovations	N/A
Upcoming	Fauburg renovations for Education Department	N/A

research collaborations and training initiatives" (Concordia University 2013, p2). This could not have been accomplished without its continued physical expansion.

Within a twenty-one year period the university's student population grew from 16,000 to 46,242, a rate that is double that of other Québec universities, but in line with the growth found in other Canadian HEI (SECOR, 2011). *Table 2* showcases some of Concordia's most significant infrastructural developments since its foundation in 1974. Funding the institutions growth[56] was a balanced between its ability to self-finance[57], provincial funding[58], federal funding[59], and private donations[60]. It appears that although all of these forms of financing are important considerations that the provincial government's contributions may exceed that of other source. The government's 2013 to 2023 Québec Infrastructure Plan designated about 6.150 billion dollars towards investment in higher education while that for 2014 to 2024 6.061 billion dollars (Gouvernement du Québec, 2014b). Given the potential economic impact of Concordia alone it this degree of investment adequate?

In 2011, the organization SECOR conducted a study on Concordia University's contribution to the economies of Montréal and Québec. Total contributions are estimated at 1.3

[56] According to the SECOR (2011) study Concordia invested 600 million dollars in infrastructure from 2000-2010 (p.24).
[57] From student FTE, ability to attract foreign FTE students, and it's invest portfolios. Concordia also initiates unique opportunities for itself such as the creation of 200 million dollars in bonds to help finance its planned physical expansion in 2002 (Marowitz, 2002). A quarter of the Stinger Dome was financed by private donations, the rest of the buildings cost was to be acquired by renting out the facility (CTVMontreal, 2010).
[58] Concordia received 97 million dollars from the Québec government for its EV building (Canadian Press, 2002), with the Ministère du Développement économique, Innovation, et Exportation (MDEIE) as the major funding body.
[59] The Knowledge Infrastructure Program part of Canada's Economic Action Plan announced in 2009, provided 2 billion dollars in funding, of which Québec received a bulk of the funding at approximately half a dollars. Concordia received about 37 million dollars (Industry Canada, 2011). Canadian Research Chair funding will be discussed later.
[60] Notable investments include the establishment of the John Molson building with 10 million dollars in personal donation from the John Molson family, 10 million dollars from the Molson Foundation, and 5 million dollars from Molson Coors Canada. (Canada Newswire Group (September 2009).

billion dollars annually[61]. Concordia's 90,000 graduates working in province are estimated to add 623 million dollars through enhanced productivity. Knowledge economy attributes such as the university's R&D are evaluated at 177 million dollars. Spending by Concordia's students and visitors generates about 464 million dollars and more than 7,000 jobs (SECOR 2011, p5). Just the average annual costs of living at $11,825 (Gouvernement du Québec, 2014a) multiplied by 46,242 students would augment that price to approximately 547 million dollars.

The report describes in great detail all of the additional and unquantifiable economic contributions made by the university. Most importantly, the study reports that Concordia values diversity, with the attraction of 8,600 students from out of province and 30% of students with English as a second language. Concordia is closely integrated in Québec's cultural and economic fabric and grows through reciprocal engagement with its community. These factors help to make a major economic impact on Québec (SECOR, 2011). These considerations will be further examined in the following examination of the university's mission, vision and values that help to define its desired *modis operandi*.

The socio-political climate for universities in Québec is currently difficult, with many cuts to public sector funding. To better understand the role sustainability plays in the Concordia University brand, its reputation and prestige, the following section examines interview findings and strategic documents, while acknowledging both the socio-political environment of Québec and the ranking of Concordia University as a comprehensive institution.

[61] It is important to recall the potential limitations and overestimations of such economic impact assessments (Wolf, 2010).

Sustainable Development for Mission, Vision, and Values

Like any developed institution it is intrinsic that a mission, vision and values are publically declared and that actions attempt to achieve these ideals. Concordia operates to maintain its mission and values while developing strategically to reach its vision. How sustainability is involved will be examined in the following in the following section. Concordia University defines itself by its:

> **Mission** Concordia University is welcoming, engaged, and committed to innovation and excellence in education, research, creative activity and community partnerships. It dares to be different and draws on its diversity to transform the individual, strengthen society and enrich the world.
> **Vision:** Concordia's vision is to rank among Canada's top five comprehensive universities within the next decade, and to be a first choice for students and faculty locally, across Canada, and internationally in a wide variety of defined areas of research and study.
> **Values** Concordia has adopted the motto of the city of Montréal, *Concordia salus* [italics in text], which speaks to well-being through harmony (Concordia University, 2009a).

Concordia's mission, vision, and values, are nicely described in a way that promotes the traditions of HE in the mission to create a unique and high quality educational experience and to empower society. Its vision devote to ranking, speaks more to research outputs, monetary gains, and the general AM of Concordia. The values and its motto coincides with the successful formation of Concordia through the merger of two HEI. Concordia highlights three core values: excellence through innovative research and action; opportunity through diversity, and original ways for students to explore personal interests; and accessibility and quality of life through secure, healthy, and respectful environments for its community (Concordia University, 2009a).

The mission of the university is an attempt to self-identify its role or position within society. It is a set of ideals to follow to form its identity. When the mission is upheld and the actions of the institution reflect it, it becomes the essence of brand. When asked to define the

Concordia brand answers more or less reflected the notions apparent in the mission, vision, and values. The CCO notes that were previous generations may have associated it with accessibility, but presently opinion leaders across Canada view it as an emerging interest, a serious research institute, a rising dynamic place, a diverse place, and according to the VPE-SG "sort-of funky" or non-traditional, which was mired by its flexibility in personalized study areas and class times. Innovative was a recurring theme followed by an association to serious social concerns, which implies a certain type of sustainable development initiatives. The VPS referred to it as a "harmonious place" as described in its motto, people and student focused and not a pretentious ivory tower. The CCES noted how research defined it as "a cool place". The DUCS hopes the brand personifies "personal success". VPS notes the brand name is established in the English community and improving its recognition in the French community, but according to the VPE-SG for those outside of the community it is associated to its exemplary faculties and schools (i.e. engineering and business). The association of sustainability with Concordia is an attribute that internally maintains a good reputation, but externally other qualities are expressed: unpretentious, community oriented, focused (VPS, 2014).

Table 3. Concordia Discusses

	Interviews	Ads	Total
Social Awareness/Activism	**3**	18	21
JMSB	**8**	5	13
Building energy consumption	**4**	6	10
Engineering	**3**	7	10
Fine Arts	**5**	4	9
DOCSE	**5**	2	7
Perform centre/excersice	**4**	3	7
Journalism/Communications	**5**	1	6
Solar Climate Simulator	**1**	5	6
College/Sustainability Centre	**5**	1	6
Accessibility	**4**	1	5
Gaming and digital design	**2**	3	5
Genomics	**2**	3	5
Human Rights and genocide	**1**	3	4
Paul Shivastava	**3**	0	3
Macleans Issues	**3**	0	3
Co-curricular Record	**1**	2	3
Areonautics	**1**	1	2
Neurological Biology	**0**	2	2
District 3	**2**	0	2

Brown and Mazzarol (2009) emphasize a *market-smart* and *mission-centered* approach to image building and enhancing market position. The goal is to establish a clear brand through strategic marketing campaigns. Strategic marketing of HEI should recognize their strengths and

weaknesses. By enhancing strengths and providing educations or opportunities unavailable at other institutions a clear image and brand develops. By searching for particular terms throughout the interviews and the ads acquired allowed for the creation of *Table 3*, a list of university elements that may reflect the most important considerations for the institutions brand. It is important to note that most of the items are research outcomes.

The topic of branding and brand recognition is an essential element of the reputation of any organization. Concordia advertises its education in both French and English. The CCO and DUCS both insist that marketing of the university is based on the activities of prominent achievements, many of which coincide with Concordia's most recently recognised research excellence. Having received Concordia's ad campaigns from 2009-2010 until the 2013-2014 academic year, the degree to which sustainability or sustainable related activities mentioned have been collected (See Appendix 12: Marketing Campaign Messages 2009-2014).

To determine whether university activities promoted in official marketing campaigns are considered sustainable, I turn to the definition applied in the Concordia Sustainable Curriculum Report (2014)[62], where it is defined by four elements:

> Social: cultural and sociological aspects; Environmental: physical, chemical, biological, ecological aspects; Economic: management, development and use of resources, influenced by Social and Environmental constraints; and Practical: advocacy, political campaigning, implementation and governance (Elvidge *et al.,* 2014, p.6)

I attempt to enrich the definition by noting that all activities should attempt to promote environmental sustainability by providing the means or ends to reduce the over-extraction of resources and pollutions emitted by humans. This can include empowerment of people and communities to act toward greater economic independence as poverty alleviation as noted by UN

[62] a joint venture of the Concordia Academic Plan 2012-2016 and the student funded Sustainable Action Fund (i.e. a project financing body for sustainable student initiatives) to determine the percentage of courses in the faculty of Arts and Science that breached sustainable topics.

Agenda 21 (1992) and in the IPCC fifth assessment notably chapter 13 (Olsson, *et al,* 2014). To further reduce ambiguity I have included any health science related activity due to its sociological enriching aspects, also because the class "Fundamental Nutrition" is labelled as a sustainable course on the Concordia University website (Concordia University, 2015c).

Since 2009, Concordia's marketing strategy has become more focused on particular developments and academic offerings. The total messages per year have reduced by approximately 150%. *Table 4* demonstrates how over five academic years, Concordia's sustainability "branding" has increased and plateaued at 80% of its official advertisement campaign. Most of these ads coincide with marketable achievements made by the university, their most prominent research areas or those most up and coming. The CCO stated that for eight consecutive years sustainability has been at the heart of [Concordia's] advertising campaign (2014). The DUCS states that generating dialogue is an objective of sustainable development messaging. The CCES stated that Concordia has more or less a sustainability communications plan in place, which includes increasing visibility on the Concordia website and having better lines of internal communications.

Table 4. Sustainable Content in Ad Campaigns

	Sustainability Related	Total Messages	Percent Sustainable
2009-2010	13	19	68%
2010-2011	17	22	77%
2011-2012	7	9	78%
2012-2013	4	5	80%
2013-2014	4	5	80%

The institution uses sustainability to enhance its branding. Currently SD are more prominently in some areas more than others. The VPE-SG mentions how it is applied in communications (i.e. solar panels, five sustainable research centres, etc.) and recruiting materials; the VSP describes its importance academically (engineering), operationally (building

energy efficiency), food services and commercial operations, and to a large part how student initiatives are advertised (waste reduction, the greenhouse, and urban farming).

This branding of the institution reflects the outputs and achievements of the individuals who define and develop it, its researchers, its administration, and its students. As Concordia's vision is to become a higher ranked institution in the comprehensive category, the following examines its strategic development plans and its current rank and where sustainability comes into play. Academics, operations, community outreach and student initiatives will be examined with highlights on sustainability oriented developments.

Concordia Strategic Vision

Rather than calling it a goal Concordia's *vision* acts to help guide its development and to seek its mission. All the interviewees agree that enhancing Concordia's reputation is a high priority for the institution, which coincides with its vision to rank among Canada's top five comprehensive universities by 2019. In the global marketplace ranking is a fundamentally important aspect of competition between universities and is closely related with its reputation and prestige measurements. The higher the reputation benefits include the attraction of top quality students, teachers, and researchers; donors are also more willing to invest in "winners" (VPE-SG, 2014).

The interviewees all state that increasing brand recognition is a high priority for Concordia. But as put by the DUCS "if you are focusing on how you rank, you are not focusing on the right things" (2014). The focus cannot supersede student excellence and experience or academic and research development, the metrics to which ranking systems weigh most heavily. The competition involves the overall performances of universities internationally, but also how individual faculties and departments rank are considered. CCES and VPE-SG state how the

competition is more between faculties than universities as a whole. This is especially true in the local context. According to the VPE-SG the environmental sustainability piece has been more prominent in the past eight to ten years, while CCES notes developments in policy making (i.e. Concordia sustainable research centre, Dr. Mendell on social economy, etc.). It remains that research and innovation gain positive recognition, and are expressed as "the only way to move ahead" and necessary "so that people take [Concordia] more seriously as a research based university" (CCES, 2014).

Enhancing the brand is described as a full time job for administration. The administration's actions and abilities to maintain excellence, to promote the university, to save on costs and to receive investments all affect Concordia's prestige and reputation. Sustainability in activities varies according to responsibility, from daily in operational activities to monthly in external interactions (Personal Communications, 2014). All administrators should be conscious of protecting the university's brand, by performing their duties diligently and ensuring outgoing messages are carefully scripted and accurate (DEHS, 2014).

The brand is a more important consideration for its academic managers. The VPE-SG commented that the president and they themselves act as "chief cheerleaders" continuously networking to promote the university and raise funds. For the President and VPs reputation is of serious concern, the VPs and Provosts meet formally with the President on a weekly basis as the President's Executive Group (PEG). Here reputation is often raised in relation to items that need to be promoted or when the university must respond to negative situations and errors made public (VPS, 2014). The President is also encouraging professors to engage with the public sphere constantly, and to get the brand name out there through whatever media (CCES, 2014).

Messaging, press releases and publicity are substantive aspects of increasing brand recognition. People have a greater access to information than ever before and universities are "vying for a spot in people's mental real-estate", while content is the critical factor, constant media presence is also important[63] (VPS, 2014). While ranking institutions declare an HEI international and national positions they are not heeded by university communications Director and Chief, due to the variance in criteria by ranking institutions and how they change through time. A university's ranking position fluctuates from year-to-year. Concordia will explain its position, but will not publicise it as it would significant developments made at the university, as these achievements benefit the brand considerably more. To publicise messages about how the university is pursuing higher ranking is too complex for an advertisement as would be describing its STARs rating (DUCS, 2014).

All the interviewees agree that sustainability affects the prestige and reputation of Concordia, but the degree depends on where sustainability is developing and how much people/society values those advances (VPS, 2014). The CCES stated it as "essential for the reputation of a university, with a sea change over the past 10 years in its societal importance. To the external community it is important both in SHE and ESD: by sustainable practices, programs, disseminating information and skills to induce action (VPS, 2014). It is important for attracting top students teachers and researchers (VPE-SG, 2014), and it is important aspect for attracting prospect students and their parents. The CCO exclaims how Generation-Z (those now applying to university) value sustainability more than previous generations, failure to act could have negative repercussions. The potential of maintaining a distinguished sustainability profile may have huge dividends for reputation, and with no top sustainable university strategic development is important (DOS, 2014).

[63] The daily ten stories released by *Academica*. It is noted as a publication with high viewership.

Concordia's current international and national ranks are not as high as the institution envisions. With multiple ranking bodies at the international and national level, the placement of Concordia varies with each one (refer to Appendix 11). Its best position comes from Maclean's ranking[64] 2014-2015 which raised Concordia's position from 13th to 10th in the comprehensive category. The ARWU 2014 ranked Concordia from 401-500, with a jump by 50 positions its international position in economics and business at 101-150 (Academic Ranking of World Universities, 2014). In QS World University Rankings, Concordia moved up 20 spaces to 461-470 overall, with the faculty of Education and training, and English language and literature placing 51-100, Communications and Media Studies at 101-150, while accounting and finance, linguistics, psychology and sociology ranked at 151-200 (Wikipedia, 2015a). Nationally Concordia ranked 20th in QS 2013/2014. 2012, may have been Concordia's greatest year in terms of accolades with Times Higher Education ranking it 91st in its 100 under 50, while the faculty of Arts and Science ranked 79th internationally (Concordia University 2013a, p2). The JMSB MBA program ranked 80th in 2013 and 81st in 2014, in The Economist international rank (The Economist, 2015). Nationally, the Higher Education Strategy Associates' rankings of Canadian universities gave Concordia ninth position for its impact and productivity in social science and humanities and 20th in science and engineering.

[64] Maclean's ranks the institution in six broad areas based on 12 performance indicators. Rankings are based on publically available data produced by universities, information provided by the federal government's major funding bodies (SSHRC, NSERC, CIHR), award information, and data from reputational surveys sent out to various professionals. The weights for the ranks are allocated as follows: **Student and Classes (20%):** 10% student awards to total students, 10% total FTE students to full-time professors; **Faculty (20%):** 8% to faculty to receive prestigious awards, 6% for Social science and humanities and 6% for medical science grants (funding amount is divided by all faculty to allocate weighing); **Resources (12%):** 6% is allocated to total research dollars, and 6% for money available for current expenses per FTE student; **Student Support (13%):** 6.5% on percent of budget spent on student services, 6.5% on scholarships and bursaries; **Library (15%):** 10% on percent of total budg*et al*located to library services, (5%) percent of library budget spent on acquisitions (Two indicators were removed that were noted as problematic in several interviews, the library holdings to FTE and total library holdings); **Reputation (20%):** is designated by response to interviews that have a regional and national component, respondents are asked to rate universities according to three categories: Highest quality, most innovative, and leaders of tomorrow (Maclean's, 2014).

Concordia is acknowledged internationally for its diversity on campus and international research collaborations. Concordia is recognized as an institutional leader in four of its six major research areas: historical studies; information and communication technologies; psychology and cognitive sciences; and visual and performing arts[65]. Visual and literary arts are internationally renowned as they consistently win and are nominated for prestigious awards (Concordia University 2013, p2).

The pursuit towards Concordia's vision of ranking 5th in the Maclean's comprehensive category is not without significant trials as a young Québec based HEI. The DUCS discussed how the ranking is "about 90%" monetarily focused, the older institutions have a more recognized brand and have more to spend on library holdings and large endowment funds. The CCO did not believe Concordia's position would change, "in terms of Maclean, we are stuck at the bottom forever" (2014). That other than Bishops and McGill all Québec universities are at the bottom. In the leaders of tomorrow category Concordia does well and keeps improving (CCO, 2014). Maclean's 2015 review removed some metrics from its library weighing; this was often addressed as a significant issue. The VPS expressed concern with some metrics, with the average entering CRC score or grade coming into Concordia lower than elsewhere, does Concordia then recruit students with higher grades just to enhance its rank? And what does that really matter if the ranking systems cannot convert the value added for students who started poorly but graduate highly (VPS, 2014)? The DUCS exclaimed that Concordia satisfies the needs of students, but this metric can only be measured by the reputation surveys and allocations to student services. Concordia has a positive bump in the reputation category. People are identifying what we do and what we do well, while other areas that are hard and fast Concordia

[65] All of these acclaimed research areas are not considered sustainability focused, but could have some sustainability content in research and course offerings.

can't compete (DUCS, 2014). On the international ranking surveys, it is believed Concordia will never get a higher ranking because of the questions asked and how it is quantified.

Whether it prioritizes its mission for accessibility or its vision which may demand increasing the entering CRC's is a conundrum, as it appears the young HEI does not have many options in terms of rank promotion. Concordia's plans to increase its ranking depend on strategies devised and pushed by administrators and supported by support staff, faculty and researchers, and their ability to produce marketable students and student projects. It include its academic plan, its operational and infrastructural developments, community relations, allocation of resources, and funding. Sustainability and sustainable development initiatives have an increasingly important role to play in each of these prestige and reputation building activities.

Academic Development

Concordia's 2012-2016 Academic Plan (2013) is a strategy to increase Concordia's prestige as a research institute. Prestige is considered more impacting on rank than reputation; major proxies to measure prestige include alumni recognition after graduation and R&D (Paul, 2005). While alumni recognition is difficult to ensure research and development can be achieved through tenacity. Since 2008, the academic plan has been based on attracting more top or star graduates, post-doctoral fellows, and faculty members. It aims to maximize the granting opportunities and research time for professors leading their fields and to credit any outstanding achievements. The university acknowledges strengths developed through its academic planning[66] and plans to invest more in current and emerging areas of strength, encouraging more major grant initiatives, to use institutes and centres to enhance inter, multi, and trans-disciplinary

[66] International reputation in visual and literary arts, more than 100 graduate programs, one of the largest graduate populations in the comprehensive category, the multidisciplinary PhD in Humanities and Individualized Master's and PhD programs are well recognized, it is the first Canadian university to offer Erasmus Mundus Master's and PhD programs (in Algebra, Geometry and Number Theory, ALGANT), and an international leader in graduate and professional skill development program (Concordia University, 2013a).

teaching and research[67], to heighten external recognition of its areas of strength, to house high profile events and increase the library's capacity and holdings. All of these elements are critical to boost prestige (Concordia University 2013a, p.2).

Concordia's 2012-2016 Academic Plan (2013) highlights five objectives for enhancing its prestige: "Expand our research strength; Promote program quality and innovation[68]; Build support for student success; Increase experiential learning and community engagement[69]; Improve academic leadership and administrative support" (p.1). Much of the plan endeavours towards investing[70] in what should produce greater research outputs and greater student success.

The plan depends on strategic budgeting and obtaining grants and funding to augment researcher agency for conducting ground-breaking research. Concordia highlights an increase in research funding from 35.6 million dollars in 2008 to more than 42 million dollars in 2012. Coinciding with this is Concordia University CRC and CFI Strategic Research Plans of 2008-2012 and that of 2013-2018. The plan highlights Concordia's allocation of Canadian Research Chairs (CRC)[71] and intentions to attain outstanding researchers from elsewhere, the Concordia

[67] Deiaco *et al*. (2012) describes that universities have more pressure to secure resources, be accountable to their stakeholders and generate impacts as they reach new levels of economic growth in the KE. The demands make interdisciplinary and mission driven modes of working necessary (p.526).

[68] Concordia is developing its online courses offerings; invest upfront for its development as they could increase funding in the long term.

[69] Already Concordia offers several programs for such activities, with the University Research Alliances (CURAs), the co-op centre and other internship placement programs in most every department, the co-curricular record, the Live Centre (promotes volunteerism). There is a wealth of community engagement opportunities that are provided by the community but are not well integrated into academic offering.

[70] Seven strategic investment categories: "graduate student funding and teaching assistantships, library acquisitions, faculty research and scholarship, dynamic and effective teaching, targeted faculty hiring, major grant initiatives, and the improvement of our students' written and oral communication skills, grounded in and nourished by critical thinking" (Concordia University, 2013, p.1).

[71] The CRC program was created in 2000 by the federal government to increase Canadian research capacity. It established 2000 research professorships, invests approximately 265 million dollars per year. Chair holders aim to achieve research excellence in engineering and the natural sciences, health sciences, humanities, and social sciences (Canadian Research Chairs, 2014a). Of the 2000 Chairs, 1880 are regular allocations, distributed based on funding sources: 846 Chairs (45 per cent) from the National Science and Engineering Research Council (NSERC), 658 Chairs (35 per cent) from Canadian Institute of Health Research (CIHR), and 376 Chairs (20 per cent) Social Sciences and Humanities Research Council (SSHRC). Chairs are allocated based on several criteria: Institution must

University Research Chairs (CURC)[72] and industry and endowment based chairs. All are expected to play a critical role in developing Concordia's prestige through their fulfillment of the university's academic goals. The plan discusses the importance of funding acquired and applications to the Canadian Foundation for Innovation (CFI)[73] and the Knowledge Infrastructure Program (KIP)[74], both revenue sources are critical to improve research funding and research infrastructure respectfully.

The CRC allocations are divided into Tiers one and two. *Tier 1* allocations are for researchers recognized as world leaders in their field. They hold a renewable chair position for seven years and receive $200,000 annually. *Tier 2* allocations are for researchers recognized as potential leaders in their fields. They receive $100,000 annually for five years. This position is only renewable once and is not supposed to support *Tier 1* chair activities (Canadian Research Chairs, 2013). In 2009, Concordia's focus was to develop CRC allocations (with 8 open CRC allocations) and for the CFI target projects in its top six research thrusts

Table 5. Concordia's CRC

	2009	2013	2015
Tier 1	6	4	4
Tier 2	14	19	16
Total CRC	20	23	20
Funding ($ Millions)	2.6	2.7	2.4
Female:Male Ratio	2:18	5:18	5:15

Sourced from Concordia University, 2009b;2013a; & 2015d.

receive =>100,000 dollars from the above mentioned funding agencies for three years prior for chair eligibility, and then the percentage of funding secured = the percentage of Chairs allocated to the institution. Chairs are distributed in alternating order: *Tier 2* then *Tier 1*, and so on. The 120 special allocations are awarded to universities who receive =< 1% of the total funding paid by the funding agencies over the three prior years. Universities can designate the chair where they desire. Universities can allocate "flexibility chairs" where they can change the tier or the research area (Canadian Research Chairs, 2014b).

[72] The CURC was developed in 2000 to retain key faculty members. The university invests in *Tier 1* and *Tier 2* CURC professors (Concordia University, 2009b).

[73] Established in 1997, the CFI's mission is to make Canada one of the top five research intensive countries in the world by 2010. It is a fund devoted to providing 40% of required investments for research infrastructure. It distributed 3.15 billion dollars by 2010, the additional 60% self-financed led to an additional 10 billion dollars in external investments (Times Higher Education, 2002).

[74] Launched in 2009 as a part of Canada's Economic Action Plan, KIP was a two year 2 billion dollar investment into the infrastructure of HEI from the federal government.

(Concordia University, 2009a). In 2013 the focus remained the same. *Table 5* outlines the variations in Concordia's CRC allocations from 2009 to 2015. Despite 28 targeted and flexible CRC only 23 were filled as of March 2013. With three less allocations filled in 2015, eight CRC allocations are undesignated at the university. The increase in *Tier 2* positions in 2013 was most likely to boost the careers of researchers in new fields. Concordia notes one abnormal strategy in the CRC arena by allocating 45% of the CRC funding to the researcher (Concordia University, 2013, p.15).

Concordia acknowledged losses in *Tier 2* holdings and are expecting to recruit a minimum of five *Tier 1* and ten *Tier 2* CRCs through the SSHRC and NSERC fields. Strategic development in health-related research are intended to augment CIHR chairs by 2018 (Ibid, p.16). Concordia identifies internal research chairs and distinguished professorships as shown in *Table 6*, and continues to aspire to be more socially equitable by balancing numbers in male and female CRC, CURC, and industry and endowment based chairs (See Appendix 13: Developing Concordia's CRC).

Table 6. CURC's and Other Chairs

Tier 1	Tier 2	New Scholars	Other Chairs and Professorships	Total
34	20	4	21	79

The academic plan identifies six areas of research expertise, (See Appendix 14: Major Research Clusters, Unifying Themes and Domains of Excellence) these are areas the university is focusing its CRC allocations and acquisitions. It is divided two clusters of three unifying themes. *Cluster 1*: The Person and Society, focuses on digital technology and "cross-disciplinary approaches to address the many social, cultural, health, and economic challenges and opportunities of contemporary life" (Concordia University, 2013, p5). Two of *Cluster 1*'s themes are arguably sustainability oriented (i.e. Development and Well-being of the Person across the Lifespan, and

Human Systems and Organization) as health and educational schemes could significantly modify Social Ecological Systems and aid in significant climate change mitigation strategies (Olsson, *et al,* 2014), and the latter with much on integration of socially responsible and environmentally sustainable business practices. For *Cluster 2*: Technology, Industry and the Environment, "[s]ustainabiltiy is a major focus" (Concordia University, 2013, p5) in all three recognized themes: Enabling Technologies and their Basic Foundations (providing technologies that have allowed developing nations to leapfrog infrastructural needs), Advanced Materials and Technologies (reducing material needs for manufacturing and transportation), and Energy, Environment and Biotechnologies (reducing building energy consumption, sustainable engineering programs, and new organisms for harsher predicted climate variability). Essentially *Cluster 1* represents social economic, industrial ecology or circular economy through business initiatives, and humanitarianism initiatives, while *Cluster 2* focuses on the Green Economy and technological ecological innovations. *Cluster 1* continues to be Concordia's strongest research area.

Concordia designates chairs in areas that are leaders in research and development or have strong ties with the community. The establishment of a centre or institute may derive from a multitude of reasons. There is however a strong correlation between research chair allocation and the establishment of centres and institutes. In Appendix 15: Concordia's Centres and Institutes, the development of these research intensive sectors of Concordia's research endeavours are placed chronologically, by their category (Senate, Faculty or other), under which cluster they fall, and the *sustainability*

Table 7. Centre and Institues Cluster Development by Category

	Senate	Arts & Sci	Fine Arts	JMSB	Engineer	(N/A)	Total
Centres/Institutes	18	10	1	10	3	6	48
Cluster 1.	9	7.5	1	9	0	5.5	32
Cluster 2.	9	2.5	0	1	3	0.5	16

element [75]. *Table 7* demonstrates how Concordia's research priorities are still concentrated in *Cluster 1* activities; however, scientific research has jumped in Senate recognition since 2009. It is important to recognize the Senate recognized centres because these represent those most prestigious to the University (several house multiple CRC). Results found in *Table 8* coinciding with Concordia's desire to be a more renowned research institute that roughly two-thirds of its centres and institutes have opened post 2000. In *Cluster 1* the developments have been

Table 8. Centre and Institues Cluster Development by Year														
	Pre 2000	2000	2001	2002	2005	2006	2007	2008	2009	2011	2012	2013	2014	Total
Total	14	1	1	2	3	1	2	1	4	9	6	2	2	48
Cluster 1.	12	0	0	1	2	1	2	1	3	2	4.5	1.5	2	32
Cluster 2.	2	1	1	1	1	0	0	0	1	7	1.5	0.5	0	16

continual, with a major influx in 2012 with the establishment of two-thirds sustainable development focused centres[76]. Since 2000, 88% of *Cluster 2* was developed, of which 67% were established since 2009. When comparing the research centres that would fall under sustainability *Cluster 2* sustainability focus exceeds that of *Cluster 1*. All Green economy designations are in engineering, as their purpose is to enhance effectiveness, efficiency and

Table 9. Sustainability in Centres by Cluster				
	Cluster 1.	Cluster 2.	Total	Percent of Total
Centres/Institutes	32	16	48	--
Sustable Development	1.5	1.5	3	6%
Social Economy	2	0.5	2.5	5%
Green Economy	0	8.5	8.5	18%
Circular Economy	1	0	1	2%
Humanitarianism	7	1	8	17%
Sustainable Percent	36%	72%	48%	--

[75] The designations of these sustainability elements is based upon information provided by the literature review

[76] The Loyola Sustainability Research Centre, and Institute for Water, Energy and Sustainable Systems, the other is David O'Brien Centre for Sustainable Enterprise (DOCSE) established in 2009.

TEI. *Table 9* highlights how Green economy initiatives surpass all others. However, due to the strong association of all other fields to humanitarianism, justice and equality, Green economy centres could actually represent the minority sustainability initiative. If it is intentional that five out of six centres categorized as N/A and three Faculty of Engineering centres and institutes[77] do not qualify as defined by the Concordia's Research Units webpage (Concordia University, 2015d). The results of this removal would result in a slightly higher sustainability intention in research centres and institutes as demonstrated in *Table 10*. Declining percentages in Green Economy are due to the removal of student focused engineering centres. The total of the centres with sustainable research content is increased to from 48% to 49% due to the elimination of the *Cluster 1* teaching centres.

Table 10. Sustainability in Centres according to

	Cluster 1.	Cluster 2.	Total	Percent of Total
Centres/Institutes	27.5	12.5	40	--
Sustable Development	1.5	1.5	3	8%
Social Economy	2	0	2	5%
Green Economy	0	5.5	5.5	14%
Circular Economy	1	0	1	3%
Humanitarianism	7	1	8	20%
Sustainable Percent	42%	64%	49%	--

Table 11. demonstrates where by category sustainability has the greatest presence. The 61% of the Senates designations due to the surge in Green economy focus since

Table 11. Centres and Institutes Sustainability Score by Category

	Senate	Arts & Sci	Fine Arts	JMSB	Engineer	(N/A)	Total
Centres/Institutes	18	10	1	10	3	6	48
Sustable	1	1	0	1	0	0	3
Social Economy	1	0	0	1	0	0.5	2.5
Green Economy	5	1	0	0	2	0.5	8.5
Circular Economy	0	0	0	1	0	0	1
Humanitarianism	4	3	0	0	0	1	8
Sustainable Percent	61%	50%	0%	30%	67%	33%	48%

[77] The removal of Centre for Continuing education, Institute for Cooperative Education, and Learning, District 3 Innovation Centre, and Centre for Teaching and Media History Research Centre in the N/A category, and Centre for Engineering in Society, Concordia Institute for Information Systems Engineering, and Concordia Institute of Aerospace Design and Innovation.

2009. Engineering and Arts and science then follow the Senate designations. However, most of these designations are housed by either faculty anyways. *Table 12* shows how sustainable research centres have been developed through time and the percentage to which all developments have sustainable focuses. Despite a three year gap from 2003 to 2008 when no research centres were established and that from 2005 to 2007 approximately 48% of all of Concordia's research centres are devoted to some aspect of sustainability.

Table 12. Centres and Institutes Sustainability Score by Year of Establishment

	Pre 2000	2000	2001	2002	2005	2006	2007	2008	2009	2011	2012	2013	2014	Total
Total Centres	14	1	1	2	3	1	2	1	4	9	6	2	2	48
Sustainable	0	0	0	0	0	0	0	0	1	0	2	0	0	3
Social Economy	2	0	0	0	0	0	0	0	0	0	0	0.5	0	2.5
Green Economy	1	1	1	1	0	0	0	0	0	4	0	0.5	0	8.5
Circular Economy	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Humanitarianism	4	0	0	0	0	0	0	1	1	1	0	0	1	8
Sustainable Percent	50%	100%	100%	50%	0%	0%	0%	100%	50%	56%	50%	50%	50%	48%

Concordia has intentionally generated progress in its research fields with a sizable focus on pushing its scientific expertise or *Cluster 2*, while building its presence in its *Cluster 1* arts, humanities and business. This growth could not have been accomplished without the intense investments in property development (See *Table 2* on p.83) and scientific research equipment. The percentages of sustainability found in the centres does not speak to how faculty is pursuing sustainability as a whole, but as most centres are composed of a multitude of professors[78] it portrays an institution that is advancing its sustainability portfolio. While sustainability in terms of research centres may have a bigger impact on prestigious factors Concordia must develop its academic niches. The next big development for Concordia and Montréal in terms of research and international recognition in sustainability is *Future Earth.*

[78] The CCES as director of the Loyola Centre for Sustainability Research mentioned that it is comprised of 30 Fulltime professors and 20 associate members from 14 departments (2014).

Future Earth

Future Earth was formed after the commitments made in 2012 at the United Nations (UN) conference Rio+20 to develop a new international network to advance scientific study on questions of environmental impact (Downey, 2014). It is a ten year trans-disciplinary international platform for collaborative research and engagement dedicated to accelerating the creation of a sustainable world. It is open to all scientists, natural and social, engineers, humanities and law (Future Earth, 2015a). The research agenda is to discover how the planet is changing; how to apply interdisciplinary science to address urgent sustainable development needs; and transforming development for long-term sustainability. It is sponsored by a wealth of international organizations[79], and involves a multitude of existing projects based-upon larger international programmes[80]. The hope is to foster collaboration between the private sector, governments, society and researchers to "co-design and co-produce a more agile global innovation system" (Future Earth, 2015b).

Of the 20 cities bidding to host the program five global hubs representing three continents were announced July 2014. The preferred bidders are together to act as the Secretariat. "The Secretariat will support five core functions: coordination, communication and outreach, research enabling, capacity building, synthesis and foresight" (Montréal International, 2014). They are all located in developed countries: Montréal, Canada; Paris, France; Tokyo, Japan; Stockholm, Sweden; and Boulder, Colorado in the United States of America. These are accompanied by

[79] It is sponsored by the Science and Technology Alliance for Global Sustainability comprising the International Council for Science (ICSU), the International Social Science Council (ISSC), the Belmont Forum of funding agencies, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the United Nations Environment Programme (UNEP), the United Nations University (UNU), and the World Meteorological Organization (Future Earth, 2015a).

[80] DIVERSITAS, the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme (IHDP) and the World Climate Research Programme (WCRP). Some further projects arose out of the Earth System Science Partnership (ESSP) (Future Earth, 2015a).

regional hubs "from which it is expected new regional networks will develop. These cover Latin America, the Middle East and North Africa, Europe and Asia. Discussions to develop an African hub and others are underway" (Montréal International, 2014).

The process of determining where the hubs would reside was a lengthy negotiations with a major consortium, its designation in Montréal and Concordia intentional an active pursuit (CCES 2014). This achievement was made by the collaborative work of Montréal International, the Québec government and Montréal universities. A partnership said to be "vital" for the operation of the new network (Downey 2014). The bid highlighted ongoing multi, inter, and trans-disciplinary research in sustainability from Montréal's universities. The CCES stated that while McGill did most of the talking, Concordia offered to refurbish space should it be granted to Montréal, which is difficult on a downtown campus.

The nomination for Montréal to host a major operational hub for the project is a significantly positive for the city's and Concordia's images. The CCES discusses how Sustainability Research at Concordia has led to its joining the United Nations Environmental Program's (UNEP) and the Global University Partnership for Environmental Sustainability (GUPES)[81]. With GUPES especially it may lead to long term international research. It also provides Concordia with "a very large external market of students… and [Concordia] might be able to develop projects in tandem with them" (CCES, 2014). Joining these institutions aided in Concordia's bid for Future Earth. For Concordia to house international cooperation on interdisciplinary research and developments will be a significant boost for the institutions academic and sustainability prestige and reputation.

Already the sustainability focused research centres are bringing together a critical mass of interdisciplinary researchers and thinking of how to integrate those topics into curriculum. Future

[81] GUPES is a coalition of 500 university members of which McGill and Concordia are the only Canadian members.

Earth will add to this capacity while increasing Concordia's external presence and internal capacity in teaching and research (DUCS, 2014). The CCES states that Concordia is not making an active effort to be known as a sustainability focused university; not to the extent that others are, however it's certainly a strong motivation. The DUCS hopes that developments and the arrival of Future Earth could lead Concordia to be known as one of Canada's sustainability institutions, especially with Concordia's expected growth in the area in the next five to ten years. With the addition of the Future Earth sustainability focused research centre brings Concordia to a ~54% focus on the issue.

The VPS stated that many HEI do not deserve the sustainability recognition. Plymouth University (U.K) was presented as an exemplary intuition where sustainability is embedded all curriculum and operations. In terms of curriculum the CCES mentions Canadian leaders in sustainability as UBC, York, Guelph, and Dalhousie for Marine Biology. UDeM stands out for its biodiversity actions and McGill for its faculty of Environmental Studies. Concordia is getting "there" academically, but in the past 20 years environmental law and epidemiology in medicine, have been garnering the most prestige from research (CCES, 2014). The potential of maintaining a distinguished sustainability profile may have huge dividends for reputation[82], and with no top sustainable university strategic development is important (DOS, 2014).

The prestige of the institution plays much into the academic achievements and other monetarily focused elements. The reputation also is highly important for an improved rank. Dale (2005) defines it as "the transitory aspects of opinions and the experience of prior students", to

[82] In 2014, Concordia refurbished an old computer store in the Hall Building into the "green space" to highlight sustainability initiatives. Whether the space will continue as is or transformed into something else is unknown. This space is located near a high student traffic corridor. To what effect it has on student sustainability is unknown. The room appears vacant more often than not. How much is its development to do with Future Earth's arrival, and a greater international focus on Concordia's sustainability?

which Concordia's values, community engagement and student experiences have a great influence.

Values, Community and Student Experience

Concordia's values relate to the accessible, secure, healthy and respectful environment it wants to maintain for its community, so that they may pursue academic excellence through innovative research and action; personal opportunity through diversity, and original ways to explore interests (Concordia University, 2009a). Ensuring that Concordia acts towards its mission and vision in a fashion that meets is values is very important. The values are implemented in the academic realm with innovative graduate profession skill workshops, individualized graduate degree and a mass of activities for students to engage with. These values are found in Concordia community events with internal members and external participants. The University of the Streets Café having run for more than a decade brings academic topics to the public in comfortable settings, while the David O'Brien Centre for Sustainable Enterprise (DOCSE) entices the community to learn about burgeoning sustainability issues. The experience of community members is a significant attribute in reputation and can benefit a university in its ranking. The VPS discussed how Concordia tries to be "attentive, responsive, and accessible, to help create positive emotional experiences that have lasting impression".

To address the needs of students and change in informed ways Concordia participated in the National Survey of Student Engagement (NESSE) in 2011 and 2012. The surveys interview the opinions of first year (FY) and senior year (SR) undergraduates about their educational experience. The DUCS stated that in terms of development the NESSE is more useful for institutional development than any ranking system. It provides the greatest utility by asking about student experience. Concordia can then change and adapt to better serve its clientele

Table 13. NESSE 2011 to 2012				
	Undergraduate Year of Study	2011	2012	Difference
Level of Academic Challenge	First Year	51%	52%	0.9
	Senior Year	56%	56%	0.4
Active and Collaborative Learning	First Year	35%	37%	2
	Senior Year	45%	45%	0
Student Faculty interaction	First Year	23%	24%	1.1
	Senior Year	31%	32%	0.4
Enriched Educational Experience	First Year	23%	25%	1.4
	Senior Year	32%	32%	-0.1
Supportive Campus Environment	First Year	55%	56%	0.3
	Senior Year	54%	54%	-0.3

(2014). The Concordia surveys were conducted with roughly 3500 students in 2011 and that in 2012 with about 3000 students. *Table 13* demonstrates how by 2012 Concordia was able to enhance the student opinions in most of all the NESSE categories. *Table 14* describes how the Concordia responses compared to the average of all responses from comprehensive universities. The results are that Concordia hovers very closely to the opinions held at most comprehensives. Its level of academic challenge, active and collaborative learning, and supportive campus environment fared the greatest, while the enriched educational experience was its weakest category.

Table 14. NESSE 2012				
	Undergraduate Year of Study	Concordia (%)	Comprehensive (%)	Difference
Level of Academic Challenge	First Year	52	51.3	0.7
	Senior Year	55.9	55.8	1.8
Active and Collaborative Learning	First Year	37.4	37.5	-0.1
	Senior Year	44.7	46.6	1.9
Student Faculty interaction	First Year	24.2	23.6	0.8
	Senior Year	31.5	31.9	-0.4
Enriched Educational Experience	First Year	24.6	23.9	0.7
	Senior Year	31.6	33.5	-1.9
Supportive Campus Environment	First Year	55.6	56.1	-0.5
	Senior Year	53.6	51.5	2.1

These broad categories are covered in greater depth and show the student experiences that may most affect reputation. In academic challenge about half of students thought the faculty held them to high standards. Perhaps more strict marking structures would improve how hard students work? In active and collaborative learning 80% of students never take part in community based projects, perhaps due to lack of emphasis from faculty, administration or lack of awareness in the campus as a whole. Faculty interaction jumped to 68% amongst FY, with discussing career plans at 62% for SR. This coincided with feedback received by the VPS when communicating with alumni whose lasting impressions of Concordia rested in "the affect experience". Feeling valued, appreciated, self-discovery, kindness of mentors/professor. A lot is personal emotional connection they have to the institution; it's a real strength of this place in addition to students learning to craft their skills" (2014). While the emotional experience of students is important still 38% of students claimed to never discuss future plans with faculty, only 25% of FY occasionally participated with faculty on projects outside of campus, while only 10% ever work on research with faculty. Perhaps a greater integration of meaningful class projects should be created or mentoring sessions encouraged. In the Enriched educational experience where Concordia fared least well against other comprehensives participation with diverse groups is high at 59% for FY, then community service at about 40%. Spiritual activities were low at 15%, followed by studies abroad at 10% and distinct program offerings 8-7%. Here promotions of sister university could benefit scores, also professors involved in interuniversity work should emphasise how colleagues at HEI abroad are leading the field in particular topics of interest. In the last category supportive campus environment Concordia students rate the overall experience highly, but weaving through bureaucratic elements remain confusing at 53%. The school is good at providing academic aid 67% but lacks in social needs at 31%. Lastly, it is

interesting that while 14% of FY students donate five hours to co-curricular activities still 69% did not.

The DOS discusses the value of community solidarity, relationships with the Montréal community. His department created the co-curricular record which acknowledges students extra-curricular voluntary services on their university transcripts. Concordia promoted the co-curricular record in its 2011 to 2012 advertisement campaign, perhaps promotions of available activities are lacking or they are not targeted to career benefits or useful work experience. While the degree to which sustainability affects this could be assumed, its potential contributions relate to how sustainable oriented teaching, research, co-curricular and student activities are marketed, popularized and relevant to students.

The interviewees declared unanimously that sustainability at Concordia University affects the perceived values, satisfactions, and loyalty of its community members. These reputational aspects are less measurable in how they affect ranking scores. Sustainability is according to DUCS a distinct part of the DNA and values of Concordia and its community. In 2007, a series of focus groups[83] determined that sustainability strongly identified in each group and it absolutely affects satisfaction and loyalty to the institution. Concordia needs to work on developing and communicating it to validate and meet people's values. Not meeting that value will have a negative impact.

Interviewees note how sustainability affects the opinions of some more than others. The DOS said that "the overwhelming caring part comes from students who are the main stakeholder". There is a lot of pride in the campus initiatives, most of which have been generated by students. There is also a lot of pride with other developments such as the LEED buildings.

[83] The focus groups were comprised of: alumni from George Williams, Loyola, Concordia, recent undergraduate students, finishing undergraduate students, same with graduate students, longstanding faculty and staff, and new arrivals.

New employees will learn during their orientation about all of Concordia's sustainability accolades. For many stakeholders it enhances the university's reputation; prospective students, some donors, some faculty, and some staff (DOS, 2014).

Most interviewees discussed how sustainability is an important aspect for attracting prospect students and their parents. The CCO exclaims how Generation-Z (those now applying to university) value sustainability more than previous generations. Therefore, the promotion of the sustainable actions and opportunities at the university are vitally important for a those whose operations depend on student FTE. Jeremy Seltzer (2012) discusses three main characteristics that should sway the ecologically concerned student's choice, "1) A healthy and sustainable student campus life; 2) preparation for employment in the green economy; 3) the environmental responsibility of policies" (p.7).

In terms of employment in the green economy, the amount of sustainability content in undergraduate student courses will both boost the sustainable reputation by helping students to pursue research in these burgeoning fields, while showing administrators where it could be augmented. The sustainable curriculum project determined the amount of sustainability content in the Arts and Science department and lower levelled courses in various departments. When compared to the total amount of courses (1245 in Arts and Science) sustainability content is still less than ten percent. *Table 15* shows that only 157 undergraduate courses are considered sustainability focused. To what degree it needs to be developed to establish a student body is a work in progress.

Table 15. Sustainable Courses

Arts & Science	117
Engineering & Computer Science	18
Fine Arts	13
JMSB	9
Total	**157**

While undergraduate programming garners little report in the Academic plan it will have a greater affect on Concordia's majority population – its undergraduate students and their

university experience. The CCES discussed how Concordia is one of few comprehensive institutions to offer sustainability as a topic of study. With the creation of the Loyola College for Sustainability and Diversity in 2012 came the Sustainability Minor now with 150 students. Determining the amount of sustainable content in the curriculum is one of the most contemporary developments of how student initiatives have prompted Concordia to act more sustainably. Currently the degree of thought on the topic at the administrative level follows a lineage derived from community and student enthusiasm.

Student Initiatives

The Concordia community has many student initiatives (See Appendix 17: Concordia's Student Groups) as well as Varsity sports teams[84] and enthusiast clubs. The student groups are categorized according to their funding strategy or otherwise: Concordia Student Union (CSU) groups, groups under Faculty Associations, Campus Initiatives, Fraternities and Sororities, the International Student's Association and independent Fee Levy Groups. Each of these organizations follow the values of Concordia and adding to its reputation and sometimes its

Table 16. Concordia Student Union and Faculty Association Sustainable Clubs

Concordia Student Union Clubs (78 total clubs)	Concordia Animal Rights Association (CARA)	Amnesty International Concordia	Cupcakes for a cause	Green Party of Canada and Quebec	Socialist Fightback Student Association	Volunteers in action	**CSU Services (3 total)**	Off-campus housing and Job Bank (HOJO)
Fine Arts Student Alliance (FASA) (21 total clubs)	Café x	**Engineering and Computer Science Association (ECA) (14 total clubs)**	Engineers without Boarders	Sustainable Engineering Concordia	**Commerce and Administration Students' Association (CASAJMSB) (16 total Clubs)**	Enactus Concordia/The Concordia Entrepreneurship and Management Association (CEMA)	CASA Cares	John Molson Sustainable Business Group (JSG)
Arts and Science Federation of Associations (ASFA) (30 total clubs)	Association of biochemistry and chemistry Undergraduate Students (ABACUS)	Association of Applied Human Sciences (AHSC)	Biology Students Association (BSA)	Geography Undergraduat e Student Society (GUSS)	Loyola College Students Association (LCSA)	Political science student association (PSSA)	School of Community and Public Affairs Student Association (SCPASA)	**Graduate Student Associations (40 total clubs)** Geograds. JSG

[84] In the literature, varsity sports teams are supposed to add to the prestige of the institution. Given the lack of victories of Concordia's sports teams, and that these teams are not as sensationalized as they are the United States, the level of prestige they add in Canadian terms may be significantly less.

prestige. They represent community projects designed to foster positive relationships as they connect people of like interests. While *Appendix 17* states how many initiatives are sustainable according to the Sustainable Governance Framework the follow paragraphs explore this sustainability content.

Of the 202 student groups that fall under the CSU and Faculty Student Associations only 22 are considered sustainable with the possible addition of 19 clubs[85] given the metrics set by the Sustainable Curriculum Project as described earlier. Meaning that of these groups 11 to 20% can be considered sustainability oriented. *Table 16* shows all of the governing bodies and associated sustainable clubs, and *Table 17* summarizes the percentage to which their clubs are sustainability oriented. ASFA maintains the highest percentage of clubs with a sustainability focus.

Of the nine campus initiatives defined seven are identified as sustainable. *Table 18* describes the launch of the activities and what they offer the campus community. It is important to recognize that some of these campus initiatives have been allocated space by the university or the CSU (i.e. Hive) as indicated with an asterisk in the table. While each maintains a unique history District 3 and Divest Concordia have achieved unique achievements that should be described. In 2014, District 3 began opening its portfolio to helping social innovation and social enterprise (SI/SE), and was

Table 17. Sustainable Clubs by Governing Body

	Sustainable Clubs	Additional 19
ASFA	20%	37%
CASAJMSB	19%	31%
ECA	14%	21%
CSU	9%	15%
FASA	5%	5%
GSA	5%	15%

[85] The following groups are potentially sustainability oriented but were not labelled as such in the Concordia Student Groups document provided by the Vice President of Services (2014). Under CSU Clubs: Student parent association of Concordia, Solidarity for Palestinian Human Rights, Model UN, the Advocacy Center, and Legal information clinic; under ECA the Woman and Black associations; under CASAJMSB: international business association and exchange committee, and supply chain studies; under ASFA: woman's studies, urban planning, economics student society, exercise science society, and law and society student association; under GSA: biology, chemistry and biochemistry clubs, and the humanities student association.

selected along with thirteen other Canadian colleges and universities to be a member of the JW McConnell Family Foundation's Recode –a 500,000 dollar fund to boost SI/SE development. The project was promoted by Marguerite Mendell working out of the School of Community and Public Affairs, who received the Prix du Québec the highest distinction awarded by Government of Québec for her internationally recognized research and contributions to the social economy (2013b). Recode will be conducted in conjunction with Québec based social economy focused organizations[86] (El Bawab, 2014). Concordia's President is actively promoting the District 3 mission, while speaking at the Board of Trade of Metropolitan Montréal he called for the creation of "a network of start-up zones that would bring companies and NGOs together with students. 'Around the world and closer to home, we need to promote the city as a place of great new ideas, leading research and creativity'" (Concordia University, 2013b).

Divest Concordia claims that the university's investments in oil companies affects its reputation. Working with the VPE-SG, who is also the President of the Concordia

Table 18. Concordia Campus Initatives

Year	Organization	Focus
1997	Right to Move/La voie Libre*	Community Bicycle Self-Service. SGW campus
2009	Sustainability Hub	Networking and Sustainable Champions
2012	Petite Velo Rouge	Community Bicycle Self-Service. Loyola Campus
2012	The Aboriginal Art Research Group	Interdisciplinary research and events highlighting aboriginal arts.
2013	District 3*	Social entreprise start-up incubator for students.
2013	Divest Concordia	Working to have the Concordia University Foundation completely divest all money from fossil fuel investment
2014	Hive Café Solidarity Coop*	Community cafés that offers sustainable food and coffee.

[86] Territoires innovants en économie sociale et solidaire (TIESS), Chantier de l'économie sociale (Chantier), Centre de recherche sur les innovations sociales (CRISES), L'Université du Québec à Montréal (UQAM)

Foundation (the university's 130 million dollar investment portfolio or endowment) they were able to convince the university board of directors to commence divestment through a 5 million dollar sustainable investment fund, making Concordia the first university in Canada to do so. Although members of Divest Concordia do not associate this as achieving their goal of complete divestment from oil and gas companies, (Seidman, 2014) it remains a marketable sustainability achievement of the university.

The Fraternities and Sororities and the International Student's Association although involved in social functions that benefit society were not considered sustainable in the Campus Students Group assessment. The final organizations on the Concordia campus that are considered sustainable are its Fee Levy Groups, a very interesting concept that meets Concordia's values and has added the most to the university's reputation in student activism, social justice initiatives, and sustainable projects.

With the formation of Concordia in 1974, came the development of the new Concordia student organizing body later to be known by its current title Concordia Student

Table 19. Concordia Student Association Fees

Year Funded	Student Association	Semseterly Fee
1979	CSU	$ 1.75
?	Student space, access to Education & legal contingency fund	$ 1.50
2004	FEUQ - (Fédération étudiante universitaire du Québec)	$ 2.50
?	ASSÉ - (Association pour une solidarité syndicale étudiante)	$ 1.50
?	CSU Advocacy centre	$ 0.30
?	ASFA*	$ 1.22
?	CASA*	$ 2.35
?	Career management services	$ 2.90
?	R.O.Wills computer lab	$ 1.00
?	ECA*	$ 2.00
?	FASA*	$ 1.35
?	FASA projects & clubs	$ 0.80
?	John Russell Harper memorial	$ 0.50
?	reading & reference room	$ 0.60
?	VAV gallery	$ 0.60
?	GSA	$ 18.50
?	GSA Advocacy centre	$ 2.50

Union (CSU). The CSU operating budget stems from a fee it derives from its constituents, profits from its subsidiary companies, and its investments. It provides students some services, works with the administration and Board of governors in important decision making, and represents the students in provincial and federal student advocacy organizations. Faculty Associations operate in a similar manner by allocating funds to the groups and projects under its umbrella. In *Table 19* the highlighted sections indicate additional fees falling under the governing group and the asterisks identify the Faculty Associations. The money collected is used to provide for the clubs, additional projects, events, and services. The early history of Concordia's CSU clubs provided the foundation of the university Fee-Levy Groups.

In the 1970's the Public Interest Research Groups (PIRGs) started in the US with Grassroots College initiatives for social justice such as: affordable HE, public health and safety, stopping government and corporate corruption (Wikipedia, 2015b). In 1981, the first Québec PIRG began at Concordia as a student club sponsored by the CSU. It was the original sustainability focused student group. In 1989, a student referendum determined that QPIRG would be funded by a student fee-levy; the organization incorporated and has helped to launch many projects that developed into student fee-levy groups, campus initiatives, and Québec organizations[87]. QPIRG Concordia continues to support an array of projects and in the past five years, developed a community-based social justice research model through core projects like Study in Action, the Community-University Research Exchange (CURE), and

[87] The most well-known organizations on campus include: the Right to Move/La Voie Libre; Cinema Politica: an international movement to show culturally significant documentaries; Sustainable Concordia and the Concordia Recycling and Composting Committee which later became the R4 working group; the People's Potato, a vegan cafeteria that provides free lunch to the Concordia community; the Frigo Vert, a co-operative health food store. QPIRG Concordia launched notable community organizations such as ASEED which became Equiterre, a Quebec wide food and social justice organization; and Santropol Roulant, a Montreal based fair trade café and community healthcare provider; and many others.

the Convergence Research Journal. These projects add to community engagement, multi and interdisciplinary research and developments while conforming to Concordia's values.

Concordia has developed a diverse group of Fee Levy groups. These groups funded by students on a per-credit basis, to which they receive some or all of their operational budgets. Each group receives an amount based upon its self-determined needs, and the cost of delivering services to students on campus and the community at large. These groups are mostly independent non-profit corporations, and unlike faculty association students may opt out of paying the Fee Levy Groups. The Fee levy groups have always cooperated together and since 2009, they connect through an informal network called Fee Levy Advocacy at Concordia (FLAC). The complete list of Fee-Levy organizations in *Table 20* shows that 63% of these initiatives missions focus on some aspect of sustainability. While all of these groups maintain a presence on campus

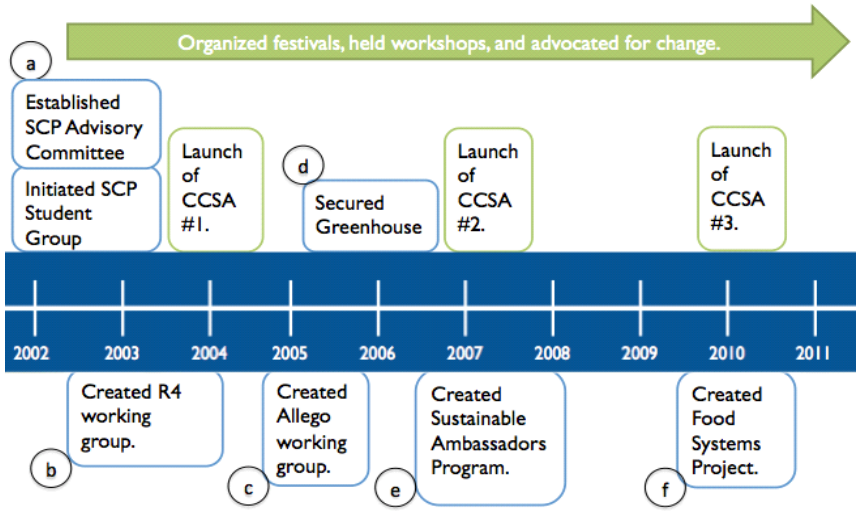
Table 20. Concordia University Fee Levy Groups

Year Funded	Group	Under graduate Fee per Credit	Graduate Fee per semester	Sustainable Focus
1969 (founded)	Community University Television (CUTV)	$ 0.34		No
1980	The Link	$ 0.19		No
1983	The Concordian	$ 0.19		No
1989	Quebec Public Interest Research Group at Concordia	$ 0.31	$ 0.50	Yes
1992	Le Frigo Vert	$ 0.33	$ 1.50	Yes
1998	CJLO 1690AM	$ 0.34		No
1999	People's Potato	$ 0.39	$ 2.00	Yes
2000	Art Matters*	$ 0.08		No
2001	Concordia Community Solidarity Co-op Bookstore	$ 0.09	$ 0.50	No
2002	Sustainable Concordia	$ 0.15	$ 0.50	Yes
2003	Cinema Politica	$ 0.07	$ 1.00	Yes
2004	Concordia Volunteer Abroad Program (CVAP)	$ 0.35		Yes
2007	Sustainability Action Fund (SAF)	$ 0.25	$ 1.25	Yes
2011	Centre for Gender Advocacy	$ 0.37	$ 0.50	Yes
2013	Concordia Food Coalition (CFC)	$ 0.08		Yes
2013	Concordia Greenhouse	$ 0.12		Yes
2013	Queer Concordia	$ 0.02		Yes

some have been allocated space by the university rent free: CUTV, The Link, The Concordian, CJLO, People's Potato, Sustainable Concordia, CVAP, Concordia Greenhouse, SAF, and CFC. QPIRG at Concordia and Le Frigo Verte pay rent to external property owners, while Queer Concordia's Space is supported by the CSU.

To date the greatest sustainability impact on university developments has come from Sustainable Concordia (SC). SC started in 2002, as a QPIRG working group sponsored by Environmental Health and Safety (EHS) with the goal of assessing the university's sustainability performance. The Concordia Campus Sustainability Assessments[88] (CCSAs) was institutionalized by the administration, the position of Sustainability Coordinator was made to manage the CCSA, which became the continual monitoring and improvement of SHE through tri-annual assessments, which included recommendations based on benchmark cases, feasibility studies and project implementation. At that time student volunteers also worked to have the shuttle buses for cross-campuses transportation switched to biodiesel. *Figure 1* and *Figure 2* show the development of the Sustainable Concordia Project

Figure 1. Sustainable Concordia's structural additions over time

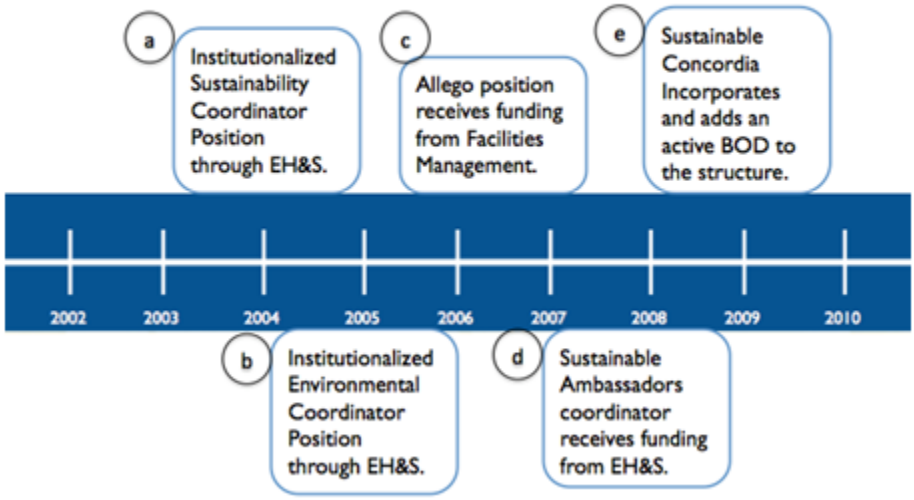


(Rees 2011, p.26)

[88] The 2012, the CCSA should have been released but is not available online.

(SCP) into SC and institutional support provided to certain working group coordinators. The CCSA led to the development of the SCP by providing data that supported the establishment of new projects and working groups. The next project to develop from a student QPIRG working became R4 (2003) to augment Concordia's recycling and composting capacity, the workload was so great and the financial savings through its implementation provoked the VPS to create the Environmental Coordinator position. In 2003, with the launch of the first CCSA came the Blueprints for Change Festival (BfC). In 2005, an annual Sustainable Business Conference was started, but by 2008 it transferred to the John Molson Sustainability Group (an offshoot of the SCP). In 2005, a working group called Allego started with the purpose of reducing the community's carbon footprint through the promotion of cycling and carpooling. The coordinator works directly with and is funded by facilities management. An old Greenhouse on the roof of the Hall building was to be decommissioned, but the student group transformed it into a student space in 2006. In 2010 the Food Systems Project started the agricultural transformation at the Loyola Campus, which transformed into the Greenhouse project City Farm School in 2011. In 2013, the Greenhouse left Sustainable Concordia as an independent Fee-Levy group. The Sustainable Ambassadors

Figure 2. Institutionalization of SC within the University over time



(Rees 2011, p.26)

Program (2006 - 2011) was a consultant group that worked directly with administrative and faculty departments to enhance their sustainability profiles. With its incorporation in 2007, the SCP became Sustainable Concordia (SC), and gained a Board of Directors to mentor the organizations growth and promote its activities. The mission of SC is to promote a culture of sustainability throughout the university.

In 2007, the Sustainability Action Fund was started. It soon became an independent corporation. It funds and supports the development of sustainable student projects and sponsored the sustainable curriculum project. The CCES mentioned that Concordia may develop a green revolving fund, a multi-million dollar fund that invests in projects that will make a return on the initial investment. The investments would only demand long-term returns potentially five to ten years. It was noted how difficult it would be to initiate this for teaching and research as they typically do not generate revenue unless through increase enrolment and tuition (CCES, 2014).

A Fee Levy Group called the Concordia Food Coalition was recently started with the mission of making on campus food more sustainable. Their aim is facilitate the transition to sustainable food services on campus through the upcoming 2015 contract proposals for the residence cafeterias. The group has several ongoing projects and its members used the mission of the organization as a platform for their nominations into the CSU, which garnered the initiative significant traction in the active student body. This also demonstrates the importance the student body places on sustainability initiatives. A JW McConnell Family Foundation fund awarded to Concordia is being developed into the Sustainable Food Coordinator position, which will join the sustainable and environmental coordinator under EHS. Food studies and sustainability remains a popular issue at most Canadian HEI, and cafeteria food was discussed in depth in Maclean's 2014 ranking issue.

The sustainable community at Concordia offers many opportunities for students to get involved with initiatives; however it appears that few students are heavily active in these types of developments. While the student groups are plentiful, there appears to be a gap in student involvement when considering the NESSE studies' findings. At Concordia student initiatives may fill gaps where faculty and administration cannot act. It appears that many of these initiatives are both community and sustainability oriented. The implementation of sustainability at Concordia while before strictly the focus of Services through EHS administrative positions and Sustainable Concordia is growing into something new, perhaps due to the importance environmental responsibility of policies has for prospective students (Seltzer, 2012).

Sustainability Governance Framework

The President's Executive Group (PEG) is a weekly meeting of vice-presidents and provosts with the president. The VPS stated that reputation is often raised when a development should be promoted or defended when the university is criticised unjustly (2014). In 2013, the PEG drafted a sustainability governance framework (SGF) previously referred to as the Sustainable Communities Partnership. It started as a reaction to the confusion about all the grassroots sustainable initiatives on campus, their relations with other groups, who was involved with them and in which to invest (VPS, 2014). The SGF then undertook the process of mapping sustainable campus initiatives (See Appendix 17: Concordia's Student Groups). With the undergrad initiatives now known the graduate and university projects still need to be mapped to establish a comprehensive picture of all the activities.

"The purpose of the sustainability governance framework is to provide strategic direction, prioritization and resource allocation in order to institutionalize sustainability within the university's decision-making process" (Concordia University, 2015e) (See Appendix 18:

Concordia University Sustainability Governance Framework). The VPS states it will "help make [Concordia] a cohesive collaborative environment" so the top administrators can better understand the sustainability environment on campus (VPS, 2014). The VPE-SG notes how the governance framework is "very loose", and sub-committees meet only 3 to 4 annually to discuss and prioritize sustainability efforts. The SGF is "really information sharing and coordination more than anything else" (VPE-SG, 2014), it is an attempt to coordinate all the diverse initiatives at Concordia, to advance initiatives, to help with funding, discover priorities while acting in a non-authoritative manner.

The Chairs of Concordia's Sustainable Steering Committees are PEG members the VPs and Provosts (plus the Sustainability Fellow) who meet regularly with the president. The VPS chairs the Operational and Environmental Sustainability Engagement Sub-Committee; the VPE-SG chairs the Community Engagement Sub-Committee; the Academic Provost chairs the Teaching, Learning and Research Engagement Sub-Committee. The CCES acts as co-chairs on both the operation and education focused sub-committees as the "Sustainability Fellow" assigned by the Provost. The committees are composed of student, student group representatives, faculty and administrative representatives "to create connections between those invested in sustainable activities in the university. Those involved may be as Onyx and Bullen (2000) call 'sustainable personalities', otherwise associated with leadership qualities, agency or the capacity to plan and initiate action and the capacity to act as critical nodes for bridging and linking community members, community groups and external sources of revenue and aid.

Leadership in sustainable development has been essential. To most effectively conduct the SGF, developing and cultivating champions at senior levels in the university is likely to be important (Mosey, 2012, p.603). The VPS for instance went on a retreat to Harvard University to

learn more about sustainable development planning and actions (CCES, 2014). It is important that those leading the Sustainable Governance Committees, the VPs, Provost, and Sustainable Fellow act appropriately, because it will serve as a more democratic method of decision making at the university. Still it is important to remember that "sometimes decision-making is collaborative, mostly it's not, and so a challenge is to be figure how to make this happen" (VPS, 2014).

The SGF is an attempt to creation of a more efficient and effective sustainable development action plan, by merging the strengths of emerging systems into traditional management. Emerging systems or the grassroots student initiatives use motivation, innovation, mobility, flexibility, develop projects quickly, have great voluntary devotion and can learn from failure. Command and control on the other hand needs stability, replicability, predictability and projects must success. Concordia thinks student initiatives are great and many times take credit for them, but they develop through student groups, some faculty and staff. Their success is limited by capacity/resource issues and the university's commitments limit the amount of resources that can be allocated to these projects (VPS, 2014).

This integration should facilitate interdisciplinary collaboration for innovation, to develop a strategic plan while promoting what is already happening. The SGF offers an opportunity for diverse members to share the understanding of what Concordia is, while it incorporates excellent ideas into core operations. The Sustainable Steering Committees could facilitate the more effective and efficient development of a sustainable Concordia but it hasn't yet. It maintains some short term deliverables but still needs to develop a strategic plan for the next three to five years. The Sustainability Tracking and Rating System (STARS) is used to assess Concordia's current sustainable position and results along with benchmarking studies are then written into the

CCSA. Both STARS and the CCSA help direct the Sustainable Steering Committees, while planning in its interdisciplinary sharing setting before setting the agenda with the PEG. At the moment the plans are to develop policy and make deliberate commitments to projects.

The DEHS expressed how every process in operations is taking on a “sustainability” point of view. Administrators need to be open and explain/share their processes and actively inform/involve higher levels. They are establishing new eco-standards in every facet of how business is conducted. Procurement policies for computers, furniture, and paper purchase are getting put in place. Because paper is purchased in bulk with other universities, changing the standards internally can influence the greater group purchase, which could potential affect the co-construction of public policy and its application or co-production.

The SGF is attempting to influence Concordia members to think and operate with sustainability in mind, so it become an internalized culture at the university. So all administrative processes incorporate sustainability by teaching and educating the staff to become advocates themselves and foster a sustainability-minded culture throughout the HEI. This shift is to encourage people to believe that "Concordia can be a sustainability leader, but it needs to think and operate differently” (VPS, 2014). While most sustainable activities enacted are not disrupting, some are and they challenge the normalcy of protocol and necessitate a change in action. Sustainable Development demands that office culture and habits are challenged, while testing people’s comfortability with change. Sometimes the disrupting effects are not worth the energy (VPS, 2014). The whole SGF operates with the knowledge that it could lead sustainability in some ways, but the university recognizes that it needs to do more. Concordia’s actions are “for [its] own importance” (VPS, 2014) but the biggest impact would result from generating student awareness, to adopt sustainable values in their lives.

The Director of Environmental Health and Safety (DEHS) said that actions towards sustainability are seen as a form of corporate social responsibility (CSR). Where Concordia must act not just as an educational institution but play a greater role in society's well-being, impacting the Montréal community and neighbors. Internationally Concordia is seen as a great educator, so if Concordia cares, then students, its community will learn about caring too (DEHS, 2014). It is hoped that the internal development of a sustainability-minded culture, projects as they develop will influence the community and other institutions. City Farm School was noted for building gardens at elementary schools. For the SGF it will be important to ensure actions are intentional for intrinsic value not superficial image bolstering. The DEHS is concerned people may interpret these actions as green-washing to boost reputation or perceptions and hopes that sustainable thinking doesn't become an unwanted additional task. Nonetheless, this CSR is important for Concordia in its attraction of prospective students as many believe that modern consumers and workers will begin to emphasise ethics and values in the organisations they purchase from and support.

To lead as an environmentally and socially responsible organization the sustainable development action plan must be coherent yet flexible. To recognize the needs to move forward the governance framework and STARS are used to weigh which proposals and objective should be committed to. The DOS discussed how the university plans to develop sustainably. The first step for the committee has been to define what sustainability means to the university, while representing diverse groups and remaining business friendly. The CCES notes how most Canadian universities pushing sustainability have a definition (e.g. York, UBC), which significantly enhance their STARS rating. Once Concordia releases its definition it should be a top rated school (CCES, 2014). After defining sustainability Concordia can move forward and

develop a vision, develop an action plan, then, start acting strategically "because it is too expensive to pursue everything simultaneously" (DOS, 2014). Long-term strategies, policies and regulations are supposed to act as catalysts to enhance rating and ranking (Yarime & Tanaka, 2012). According to the Dean of Students actions need to be based on what is currently happening, celebrated, while acknowledging what's lacking. Then the community, students, staff and faculty should be polled and benchmarking instances should be examined before acting. The university should be "acting because it is right for the institution, not acting from external pressures [i.e. rankings] or peers actions. It has to be a made in Concordia approach that makes sense to us" (DOS, 2014).

The CCES stated that just creating the Sustainable Governance subcommittees is an achievement for Concordia; with all the top level people on them, and the Board of Governors likes the image provided it's not anti-business. "This represents a commitment by upper administration to at least listen to these issues" (CCES, 2014). The SGF has already addressed the difficulties of implementing SHE discovered by Velazquez *et. al.* (2005). The administrators are aware, interested and involved, they have developed an organizational structure to examine issues and set time aside for work. The funding may be an issue but that is already four of the top five issues resolved.

The DEHS stated that the reputation of Concordia is less bureaucratic, at least on the administration side and its flexibility allows for the SGF. Before Concordia was leading Québec universities with its environmental reputation because of R4, the industrial composter, and student initiatives (DEHS, 2014). Many of the interviewees note the importance of acting before celebrating intention. The VPS believes Concordia is still in early stages and not very mature in terms of an organization or in terms of sustainable practices. They are still trying to put it all

together and exploit potential properly" (VPS, 2014). As focus on SHE is still relatively new concept for organizations Concordia has set a good foundation for agency in SHE.

However, a common theory is that organizations with an office of sustainability or those that have developed a Vice President of Sustainability position are more effective at developing SHE. Already the VP Services has ensured full-time administrative positions focused on sustainability. Under the VP Services is the Director of Environmental Health and Safety (EHS), in this department are Concordia's three sustainability officers, the Sustainability Coordinator, the Environmental Coordinator, and the coordinator of the Campus Community Sustainability Assessment. These positions are mandated to manage sustainable development initiatives, reduce waste produced by the university, and assess the university's level of sustainability and next steps.

The VPS believes that a senior lead or VP would signal to the external world that an institution is more serious about sustainability and capacity to transform the organization. Concordia examined the possibility. Such a position would need to be approved. If you had (as Concordia does) a director of sustainability four layers down from the president it's not going to be the same impact then if you made it at a top level, official or person, and that could be a way to disrupt in a positive way, but disrupt the tradition of the institution. "My sense is that a lead on sustainability with the proper circumstance could help make that change" (VPS, 2014).

To what level the structural organization of sustainability on campus affects its smart planning remains unknown. Just as the signing of a sustainability declaration does not imply a commitment to developing SHE, such as the Tallories Declaration[89], Concordia believes the SGF is the best way for it to approach SHE. The application of sustainability assessment tools has been instrumental in determining where and when to initiate sustainable projects. To what degree

[89] Concordia signed the Tallories Declaration in 1995.

may SHE affect reputation and rank and how is the STARS framework benefitting Concordia? Could sustainability become another metric for ranking? And if so what are some potential issues in this for Concordia and Québec based HEI?

Concordia, STARS, and Sustainability as a Future Ranking Metric

Concordia's initial sustainability assessment applied the Sierra Youth Coalitions sustainable campus framework, but since its creation in 2006 the Sustainability Tracking, Assessment & Rating System™ (STARS) has been used to measure Concordia's sustainable performance. Currently the system has 686 registered institutions of which: 505 are AASHE

Table 21. Canadian STARS Rating Institutions as of January 30th 2015

University	Province	Score	Rating	Rank	Version	Submitted
Université Laval m	Quebec	73.28	Gold	1	1.2	24/01/2014
University of Alberta m c	Alberta	71.76	Gold	2	1.2	10/10/2014
Dalhousie University m c	Nova Scotia	70.82	Gold	3	2	07/01/2015
Royal Roads University m c	British Columbia	70.03	Gold	4	1.1	26/05/2014
University of Calgary m c	Alberta	67.52	Gold	5	1.2	28/06/2013
Western University m c	Ontario	67.42	Gold	6	2	06/10/2014
Simon Fraser University m c	British Columbia	67.01	Gold	7	2	29/10/2014
University of Victoria m	British Columbia	66.45	Gold	8	2	29/01/2014
University of Ottawa - Facilities m c	Ontario	58.86	Silver	9	1.2	10/04/2013
McGill University m p c	Quebec	56.03	Silver	10	1.1	01/08/2012
Wilfrid Laurier University m c	Ontario	55.21	Silver	11	2	20/12/2013
The King's University m c	Alberta	52.43	Silver	12	1.2	27/11/2012
MacEwan University m	Alberta	49.31	Silver	13	2	30/10/2014
Saint Mary's University m c	Halifax	48.98	Silver	14	1.1	30/07/2012
Concordia University m p	Quebec	45.07	Silver	15	1.1	11/10/2012
University of Saskatchewan m c	Sascatchewan	42.79	Bronze	16	2	30/01/2015
Northern Alberta Institute of Technology	Alberta	37.63	Bronze	17	1.1	23/03/2012
Lakehead University m	Ontario	36.94	Bronze	18	2	12/11/2014

m = STARS membership, c = Chartered Member, and P = participant in 2006 STARS Pilot.

members, 229 are STARS Charter Participants, and 50 participated in the original STARS pilot[90]. With 52 Canadian member organizations, 30 are Canadian universities, nine are members but do not publish their findings, three have expired their memberships (including the University of British Columbia who in 2011 was the first to rate gold in Canada). The other 18 are ordered according to score in *table 21*. Concordia not having published a STARS report since 2011 is rated silver and ranks 15th out of the 18 reporting Canadian universities.

In Appendix 19: Maclean's Ranking, STARS rating and Sustainable Leaders Compared, there is an attempt to determine what type of correlations may exist between ranking well, being a sustainability leader and self-rating. Of the 30 top ranked universities in Canada 70% have been involved with STARS to some degree. Of the top ranked medical doctorial universities 73% are STARS members. In the Comprehensive category the participation levels are 60% with six non-member, five members, and four reporting institutions. Of those not ranked in Maclean's top 15 are five of the lowest rating universities, Royal Roads University (4th highest in STARS) who does not qualify for Maclean's ranked (due to its specialized mission), and one member organization. 70% of those not-qualifying in Macleans' top 30 are considered sustainable leaders, compared to 60% of Maclean's top 15 Medical Doctorial and 13% for top comprehensives.

Although sustainable development may be a tactic for low ranking HEI, its development provides a point of comparison with the most prestigious Canadian universities. Williams (2010) stated that "[t]hose that flourish in the sustainability agendas are more likely to be institutions struggling to prove their place in the academy, typically new universities, and former polytechnics" (p.72). While this may have been true, *Table 21* demonstrates how elite universities are more likely to develop their sustainability portfolio in Canada than any others. Perhaps young lower ranked HEI involved in SHE are those most up and coming due to the

[90] Concordia along with McGill were the only Canadian universities to pilot the tool.

prevalence of sustainable development projects contemporarily and its more than likely continued celebrity into the future. For Concordia the sustainability ratings and leadership designations are quite unique for a top 15 comprehensive university (see Appendix 19) and may prove a marketable achievement, especially after its next STARS report is released with its gold rating (CCES, 2014).

The DEHS described how there is a healthy amount of competitive spirit with STARS. When Laval put out its gold rating people became very interested. Environmentally and operationally Concordia wants to do its best. Their standards are "behind everyone's minds" (DEHS, 2014). Concordia desires to match or surpass other Québec universities SD actions at least in some areas, while the motivation should be for improving Concordia and not for the rating. Interviewees stated that discussions are always about improving the institution first with the STARS as tool for intelligent development and the rating as a bonus.

The CCO notes how although community relations are important, teaching, research and the buildings around Concordia are the main business and have the biggest impact. The CCO and VPS described how infrastructure could improve (i.e. gas emission reduction policy, etc.) and how valuable it is in terms of Concordia's sustainability reputation (i.e. Concordia has been the most energy efficient institution for 8 consecutive years). In terms of STARS under the operations category Concordia does well, and developments will most likely continue where Concordia does poorly in curriculum and public engagement.

Most interviewees note how the STARS assessment adds more value than most ranking systems. The ranking systems reflect HEI but do not invoke discussion within. STARS creates the momentum for change, from rigorous data collection leading to actionable recommendations. STARS has a diagnostic phase that invokes reflection into how to tackle an issue. It involves

community in parts of the discussion, it's a community effort and its actionable, provides ownership over it and responsibility for the results (VPS, 2014).

The DUCS discussed how in ranking schemes there is a lack of transparency for how points are assigned and that the top positions are always filled, whereas the STARS point system is transparent and top levels of achievement may not be fulfilled by anyone. CCO stated how due to STARS self-declaring nature, it is difficult to know how one institution rating truly compares to others. Even at Concordia self-declaring is an issue. Researchers are supposed to declare their sustainable research, but many people made reporting errors (after the 49 declared on the previous STARS assessment other sustainable research was discovered).

The pros and cons of a "STARS like" measurement as a metric for ranking universities were asked of some interviewees. It is believed that it would add value as it would reflect Concordia's level of sustainability annually rather than tri-annually. There are many foreseeable issues: the potential of eliminating self-defined notion of sustainability for a static definition; each ranking system may develop its own criteria for assessing sustainability which may not reflect Concordia's dedication to sustainability; if its monetary based, or if it is based on total budget allocation to the sustainability department (of which Concordia does not have). The DUCS remarked how rankings are an industry, if they did launch sustainability metrics they would still attempt to sell Concordia ad space in their magazine.

It was asked specifically of the DUCS how valuable being the top rated in sustainability (i.e. the first STARs platinum rated HEI) would be for an institution's promotion and reputation. The response was that specific achievements are not very marketable to mass population. Press releases must be descriptive about achievements and why it is important. That Concordia reduced its energy consumption by 75% for example. The CCES notes that STARS utility for

reputation is limited because it unknown to many people. STARS may be a point to mention at inter-university functions, it could be used to recruit future students, its overall impact could increase and Concordia should continue with it (DUCS, 2014).

While speaking with the DUCS the rhetorical question of which ranking system is best arose. Could it be known when they all apply different metrics? Most of which are monetarily biased. This also brings up the question of the significance of ranking systems for sustainability. Ranking systems measure the value of an education. If sustainability is becoming a major focus for university education and this "culture" values technological innovation, social responsibility and cohesion somewhat equally, does the ranking of sustainability require the generation of new proxies to measure the value of sustainable educations? Or are existing monetarily biased proxies well enough to differentiate sustainable impact to green-washing?

Discussion

It is difficult to ascertain the direct influence sustainability impacts the rank or reputation of the university. Albeit it is undeniable that every action a post-secondary institution takes can affect its reputation and sustainability is currently a significant contributor. Given Concordia's recent focus on its development it is likely to be the most important. Concordia demonstrates this through its academic development plan, as more focus is currently put into developing research into reducing the impact of humans and technologies on the environment and developing sustainable systems; all of which are effect conservation initiatives. The genomic and structural manipulation of organisms although maintaining a contentious ethical position may enhance the resilience of the current global socio-economic paradigm, pursuits are made hopes to maintain the established panarchy through the creation of more resilient plant species, better sources of biofuels, and additional inventions. The green economy garners more recognition through

breakthrough developments and the desire is for Concordia to push its strengths in these technologies. The green award winning business school's reputation for sustainability is significantly dependent on the promotion and implementation of corporate social responsibility and development of the circular economy. The Loyola Sustainable Research Centre and the development of Future Earth will definitely enhance Concordia's ability to generate innovative trans-disciplinary solutions for serious sustainability issues. These developments are likely to be improved through strategic hiring of CRC candidates and the accommodation of more post-doctoral researchers in these sustainable fields (i.e. health research, genomics, engineering, science, and business), while research in preventative solutions and human rights will continue hopefully uninterrupted.

Concordia is a unique HEI with a history of emerging systems or grass roots initiatives, most consciously promoting social justice for human equality, access to education, and the resolution of conflict. Should the university adopt a definition of sustainability that does not address these concerns (for being anti-business or too radical) does it imply that academic managerialism, the devotion to increasing salaries, funding opportunities and pursuit of prestige and reputation takes a higher priority than the mission? At what price will Concordia pursue its vision for ranking?

In what way is Concordia accessible and to what degree can it remain so while pursuing a greater rank? As access to post-secondary education is not directly mentioned in its mission but is well recognized among administrators as a brand characteristic, is this virtue achieved solely by allowing the public access to research information? Is it a statement of how Concordia does not discriminate on low entering scores? If attracting top students is a relevant aspect of

augmenting rank will Concordia demand students with higher entering scores? What does that imply for accessibility?

Perhaps for young institutions without the brand recognition of older Medical Doctorial universities the issue of funding, privatization and public access to higher education has greater significance (e.g. given that McGill is ranked first by Maclean's but is under the same Québec student pricing scheme). The price of tuition can block some people from pursuing higher education all together. The administrators note the benefits of increasing tuition rates for bigger budget and greater educational offerings/ranking. What is the balance between student population for funding purposes and ranking purposes? Is there a correlation between Québec universities receiving much of their budgets from FTE and Concordia's continued growth in student population? It appears the university could be stuck in a funding cycle dependent on increasing its physical infrastructure to house more students.

Are administrators willing to support Québec's low tuition as a means of supporting public accessibility? If so will Concordia be instrumental in developing new policies and projects with political allies to support Québec universities, to resolve budget cuts, and the loss of positions necessary for providing the academic support Concordia wants to improve? These questions hone in on reputational conundrums, a choice to maintain a reputation of accessibility or pursue a mission for ranking, perhaps not as black and white as posited here, but still a difficult decision for administrators and the Board of Governors. The general thought in the literature is that privatization of education ranking pursuits will remain the priority. Even though Concordia is now ranked 11th in Maclean's can it augment the position without greater monetary influx? What tactic will it apply that may rank it higher than 6 other universities?

Part of this involves the need to improve levels of student satisfaction and engagement. With decreased financial capital and a new-found student population to what degree will student engagement be applied to enhance Concordia's sustainable reputation? Will Concordia demand higher standards from teachers and students? Should it depend on more opportunities for student involvement in community projects, the better communication of existing ones or further promote the benefits of engagment to students? How can Concordia get greater interaction between professors and students in activities outside of the university? Can boosting sustainability just require a higher level of internal focus, interdisciplinary and cross-departmental collaborations that engage undergraduates to help make their university a better place? Only 7-8% of Concordia's undergraduates are involved with distinct program offerings or acknowledge their existence, an obvious reputational void that is not benefiting the university. To what extent can student clubs, student initiatives, and the Fee-Levy corporations be utilized to enhance student engagement? Yarime and Tanaka (2012) state that rarely do universities and their surroundings communities collaborate closely to initiate integrated approaches to sustainability, despite huge opportunities for mutual benefits. Perhaps these are the opportunities Concordia needs to exploit?

Many of the answers may lie with the developments from the Sustainable Governance Framework itself, as they connect with and map the sustainability assets of the university they must commit to long term goals and an appropriate action plan, while remaining flexible and adaptive to change. Despite this Concordia will continue to make policies more environmentally and socially conscious and grow a culture of sustainability mindedness. Concordia is developing an academy where ecological literacy will be a staple of the undergraduate experience despite ones field of study. While the support they provide student initiatives through the creation and

institutionalization of positions, funding project materials, and expertise in strategic development is important, it may be the creation of new projects such as District 3 that prove most beneficial. The Concordia Food Coalition could be aided in its acquisition of land so the university develops food self-sufficiency, with the creation of new infrastructure to transform the Greenhouse into a high-tech model of urban agriculture, the possibilities are bountiful and like advertisements or the selection of CRC should focus on bourgeoning and existing strengths.

Given that only 33% of the 30 top ranking Maclean's universities are actively publishing their progress in STARS Concordia is a member of a niche community. With 80% membership and 53% publishing in STARS among the highest ranked Medical doctoral universities in Canada and 60% membership and 13% publishing in comprehensive, Concordia stands out and will continue to do so as it maintains and develops its infrastructure, operations, academic and student engagement offerings. As the STARS framework suggests the same areas of development for all institutions it could increase international isomorphic mimicry. This occurs when institutions following leaders to maintain competition with institutions of similar caliber. Therefore if these universities are also applying the STARS framework, sustainability at Concordia may not be as innovative as desired.

Whether intentional or not Concordia sustainable actions should actively attract prospective students more interested in sustainability, which should lead to Concordia being recognized as a Sustainability University. Yet, with the expansion and refurbishment of infrastructure to build its sustainability portfolio, the question remains, how sustainable is the race for higher ranking? Perhaps universities will establish carbon offsetting as a policy forcing a more intergenerational planning scheme.

A university is a complex adaptive system that operates in a complex political and economic climate where the environmental stability of the planet may not be a priority. The bottom line is maintaining funds to operate effectively, which is based on the merits of its people, their capacity to generate and the support systems of government and other donors. Given the fiscal climate and social issues revolving around post-secondary education, the HEI in Québec may be more resilient while they are definitely the most sustainability action orientated in Canada (Beveridge, McKenzie, Vaughter, & Wright, 2015). Developments such as the Sustainable Governance Framework (SGF) may prove as the opportunities required for enhanced adaptive systems through inventiveness and experimentation. Resistance or rigidity to change and stability are important qualities, but diversity and flexibility provide greater resilience, which is critical for recovering and adapting to shocks such as budget cuts.

An adaptive system operates with *Adaptive capacity*, the ability to maintain its current state despite perturbations. This is in essence the resilience of the system (Hollings 2001, p.394). When designing systems for complexity it is important for institutions and agencies to manage with adaptive capacity (Folke et.al, 2005, Folke, 2006). The adaptive governance framework depends on the cooperation of actors and stakeholders in multi-level institutions that interact within a diverse set of social and ecological scales (Folke, 2006). It is comprised of at least four essential components:

> understanding ecosystem dynamics; developing management practices that combines different ecological knowledge system to interpret and respond to ecosystem feedback and continuously learn; building adaptive capacity to deal with uncertainty and surprise including external drivers; and supporting flexible institutions and social networks in multi-level governance systems (Folke *et al*., 2005)

Is the SGF following this guideline? Could the governance of Concordia better reflect ecological resilience? Would it need to abandon some of its command and control structure to accommodate a hybrid model? Could technology facilitate a more democratic decision making model? Could

the SGF be the best of both worlds and perpetuate the current state of up-ranking without necessitating greater funding inputs?

Perhaps when post-secondary institutions adopt sustainable practices they become social economic organizations (SEO)? Working for a common good, where the commonality is to "achieve specific community benefit, under a triple bottom line (people, planet and local economy)" (Pearce 2009, p.23). The educational, community and student initiatives could add to people's agency toward empowering themselves, generating value, money while conserving environmental resources. Emmanuel (2012b) believes that social enterprises act as a nexus in the relationships between individuals and communities. Their status as internal economic actors aids in the building of social capital and opportunities for community members (p.38). How many of the defining features of a SEO does Concordia embody?

1. The organization must carry an economic activity.
2. The existence of social rules prohibiting or limiting distribution of surpluses among members.
3. To have a formal voluntary association of persons and/or of collective bodies.
4. Democratic governance (Bouchard *et al*., 2006)

The first can define a university as it adds to the local, regional and national economy through research, development and tuition. The second is impossible with reputational and prestige factors based on the exorbitant packages for top ranking administrators. The Board of Governors are a formal and voluntary group of people who act in a democratic way to institute official changes. Perhaps the democratic governance refers more to cooperative models of governance and would not include this somewhat autocratic top-down decision making structure. Nonetheless as a SEO a university would be developing closer to true conservation and sustainability.

At the moment, universities operate between the three types of industrial ecosystems discussed by Benyus (1997). As type one the university is opportunistic in attempting to

maximize funding, grow and maintain itself through resource availability, it is unsustainable as it can deplete resources, and co-creation between community and other universities occurs less often. As a type two its focuses on aggregating and storing resources in its endowment fund for future resource limitations or growth. A university also follows a type three strategy, one that is patient with extreme loyalty to place. While these species dominate a space usually until the next large disturbance, they depend on giving back to their locale nearly as much energy as they take from systems. Much like the Circular economy is devoted to developing a sustainable economy, the university to be sustainable must develop towards the type three system; generating human and social capital, attaining financial self-sufficiency and giving back more than it receives (which it may already do according to SECOR, 2011), and growing with either a positive or no impact on the biosphere. Then it would have "consciously shape[d] itself as a model of planetary sustainability" (M'Gonigle & Starke, 2006, p. 83). With SHE at leading institutions like Concordia this may come to be, but it depends on concrete sustainable action plans and there acceptance by VPs, Provosts, Presidents and Board of Governors.

Conclusion

Higher education institutions maintain a culture of embedded cultures. Command and control and emerging systems organizations interact, educational disciplines maintain each their own norms, promoting particular values and to a degree some are at odds with each other. They are all embedded in the culture of standards in higher learning, research and development. Sustainable development as a culture is now another becoming embedded into post-secondary institutes.

Universities depend on relationships and ability to intake funds for developmental purposes. Managers or administrator's responsibilities and pay reflect that of top paid public

officials, while star teachers are pursued for the more permanent positions due to their ability to raise funds and ability to enhance the rank of the university. There is a concern that post-secondary institutes commodify education for ranking purposes offering credentials rather than pursuing their traditional missions for providing educational excellence for students.

When concluding the literature review many of the elements suggested as reputational enhancements were already much a part of Concordia's paradigm. The university's mission, vision and values support targeted branding strategies to attract prospective students. It is integrating education in sustainable development, and has many interdisciplinary research centres creating innovative ideas and products, some in the green economy others in the social economy all making Concordia a leader in niche areas of the sustainable knowledge economy. It may be lacking still in facilitating applied undergraduate research but offers many individualized research opportunities at the graduate level. The university has been promoting alternative systems (e.g. food, transportation and waste) that augment its sustainability rating, reputation and consequently its ranking.

A university's mission for educating its community members as best as possible is somewhat disturbed and fortified through competition to rank higher. To expedite the process of reaching a higher ranking, the HEI is caught in a cycle to boost prestige and reputation for more funding to rank more highly. However this is an issue of post-secondary institutions globally. To what degree these market forces and reactions are sustainable is questionable. The game to be a top ranked university will continue nevertheless.

The question to determine the impact of sustainability on the prestige, rank and reputation of Concordia University has been answered. Québec is a place where sustainability is quite popular, through a history of social justice, green energy technology, social economic and

financing structures, and post-secondary institutions that are leaders in sustainability. Montréal stands as an internationally recognized place for sustainability and innovative design. Concordia operates within this environment and sustainability impacts each of its community members in different ways. Sustainability is in Concordia's DNA. Research and development, the allocation of CRC, CURC and other research chairs are all largely revolving around some sustainable topic which is reflected in the advertisements. It has a bustling set of community initiatives providing sustainable solutions through social justice work and co-curricular activities. Its student body is willing to put in the long hours necessary to see jobs completed and pursue the sustainable agenda. It has sustainable officers devoted to assessing the sustainability of the university, pursuing policy and long term project development. Concordia has the most energy efficient campus in Québec. It is investing 5 million dollars into a sustainable investment fund and helping students create environmentally friendly social economic enterprises. It is trying new collaborative methods for solving problems, developing a coherent framework for sustainability, and will be in the international limelight as the home of Future Earth.

Sustainability is an essential aspect of prestige and reputation at Concordia and will most likely be the most important aspect of it achieving its vision of attaining the 5th position amongst Canadian comprehensive universities by 2019. With 61% of Senate recognized centres, soon to be 54% of all centres focused on sustainability research, 80% of advertisement campaigns are focused on sustainable research, a continued devotion to SHE, and the development of a body to quicken the pace of strategic SD at the university. Whether intentional or not Concordia is making itself out as a sustainability university or at least marketing itself to be one. As sustainability is becoming more and more a competitive advantage and a method to continually

improve an institution's overall performance (Green & McCann, 2011), what reason does Concordia have not to?

Sustainability is a complex notion. The panachy of interactions on a global scale are increasingly connected more efficiently through technology, how they maintain the current system's integrity are based on human agency to adopt a culture of sustainable-centered actions. The hope is that as cultural awareness grows, a new paradigm will emerge where all institutions consciously shape themselves as models of planetary sustainability. The hope is for a planet where social and environmental justice takes precedence over increasing personal power, prestige and reputation.

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Appendices

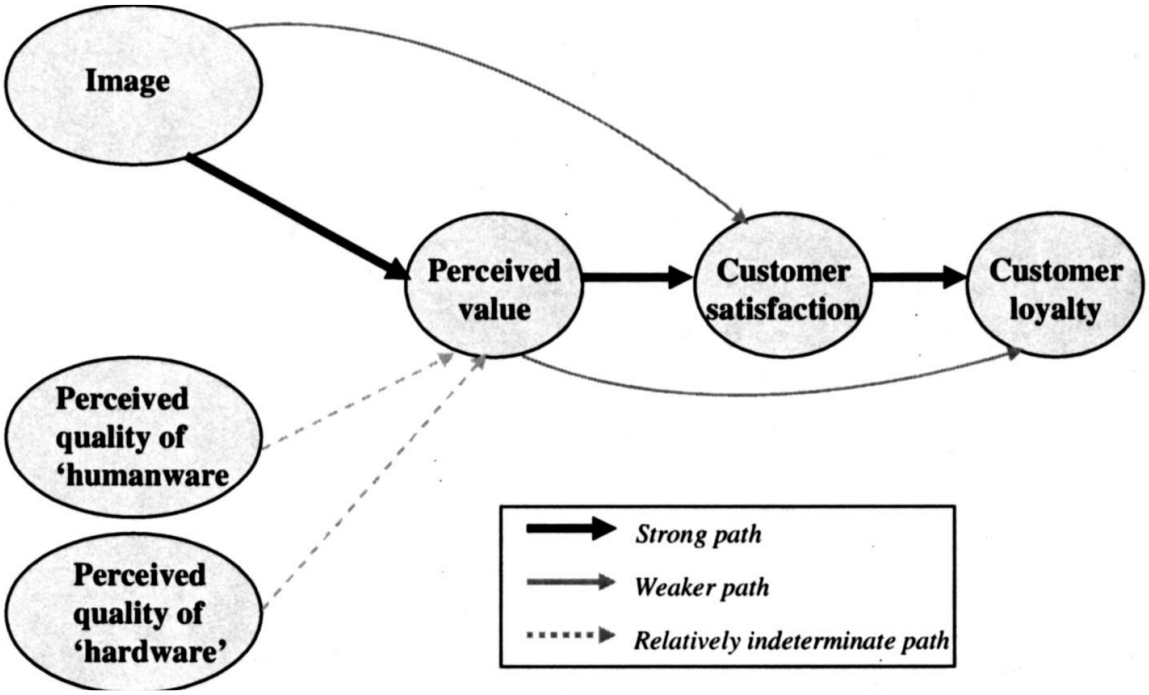
Appendix 1: Global Ranking Metrics

Mapping institution actions against rankings

Area of action	Examples of actions	Approximate weighting according to SJT and THE rankings
Research	Increase output, quality and citations reward faculty for publications in highly cited journals Publish in English-language journals Set individual targets for faculty and departments	SJT = 40% THE = 20%
Organization	Merge with another institution or bring together discipline complementary departments Incorporate autonomous institutes into host HEI Establish centers of excellence and graduate schools Develop/expand English-language facilities, international students facilities, laboratories, dormitories Establish institutional research capability	SJT = 40% THE = 20%
Curriculum	Harmonize with EU/US models favor science/bio-science disciplines Discontinue programs/activities which negatively affect performance Grow postgraduate activity relative to undergraduate Positively affect staff – student ratio (SSR) Improve teaching quality	SJT = 10% THE = 20%
Students	Target recruitment of high-achieving students, especially PhD Offer attractive merit scholarships and other benefits Propose more international activities and exchange programs Open international office	THE = 15%
Faculty	Recruit/head hunt international high-achieving/HiCi scholars Create new contract/tenure arrangements Set market-based or performance/merit-based salaries Reward high achievements Identify weak performers	SJT = 40% THE = 25%
Public image/ marketing	Professionalize admissions, marketing and public relations Ensure common brand used on all publications Advertise in nature, science and other high focus journals Expand internationalization alliances and membership of global networks	THE = 40%

Source: Hazelkorn (2009: 71).

Appendix 2: Model of relationship between image, value, satisfaction and loyalty



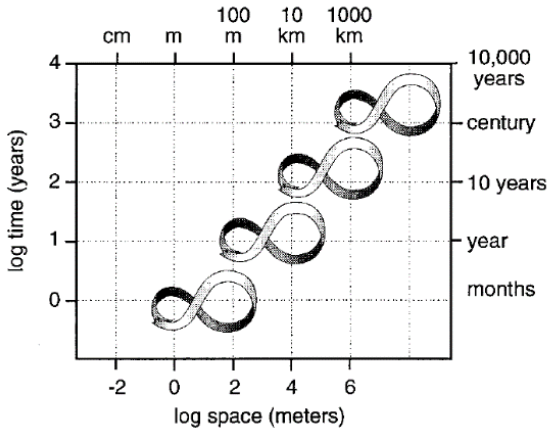
Source: (Brown & Mazzarol, 2009, p.90)

Appendix 3: Influences on Diversity and Convergence.

Factor	Diversity promoted by	Convergence promoted by
The environment	Environmental heterogeneity	Environmental homogeneity
Policy intervention	High level of intervention to promote diversity	Deregulation
	Highly regulated binary systems	Unitary systems
Funding	Specific financial incentives to promote diversity	Financial incentives targeted to other outcomes
Competition and cooperation	Competition in periods of low demand and economic stringency	Competition in periods of high demand and economic prosperity
Ranking	–	Mimetic isomorphism of low-ranking institutions

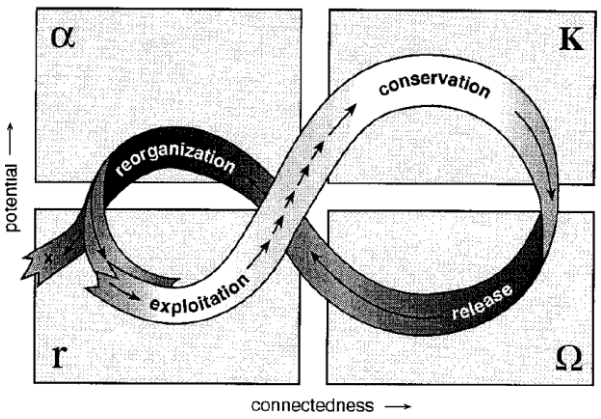
Source: Codling and Meek (2006).

Appendix 4: Panarchy

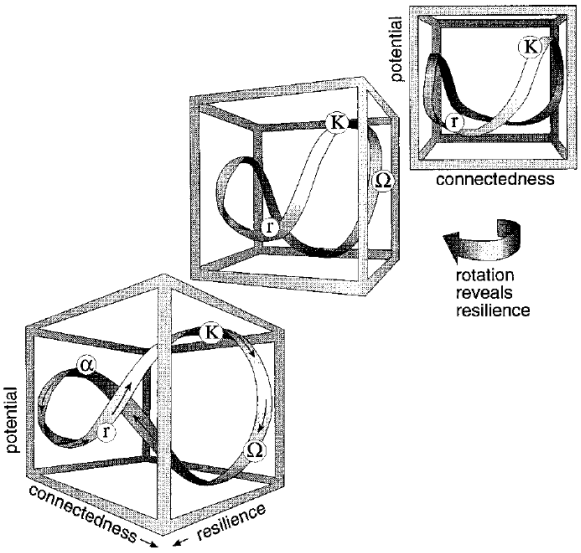


Panarchy is a hierarchical structure that operates through time/space scales. A hierarchy here is described as "semi-autonomous levels formed from the interactions among a set of [similar] variables… Each level communicates a small set of information or quantity of material to the next higher (slower and coarser) level (Holling 2001, p.392). Two services are offered by each level of a hierarchy: the dynamic function known as *an adaptive cycle*, creating and experimenting with innovations within a level, and conditions for conservation and stability for the faster and smaller levels (Ibid, p.393).

The adaptive cycle is the primary service of panarchy. There are three properties that shape the adaptive cycle and the future state of a system: *wealth, controllability,* and *adaptive capacity*. *Wealth* refers to potential avenues for change. *Controllability* is the connectedness between internal controlling variables and processes that influence to what degree a system may be self-determining while under influence of external factors. *Adaptive capacity* is the resilience of the system, which determines its vulnerability to perturbations (Ibid, p.394). The adaptive cycle is represented by four system functions (r, K, Ω, α), influenced by changes in system potential and connectivity of control variables. The arrows represent speed in cycle flows with short arrow as slow and long arrows as fast changing situations. The cycle operates in sequence from long periods of slow accumulation and transformation of resources (r to K) (connectedness and stability increase as capital is accumulated) to shorter periods with opportunities for innovation (Ω to α). Here potential includes accumulated ecological, economic, social, and cultural capital as well as

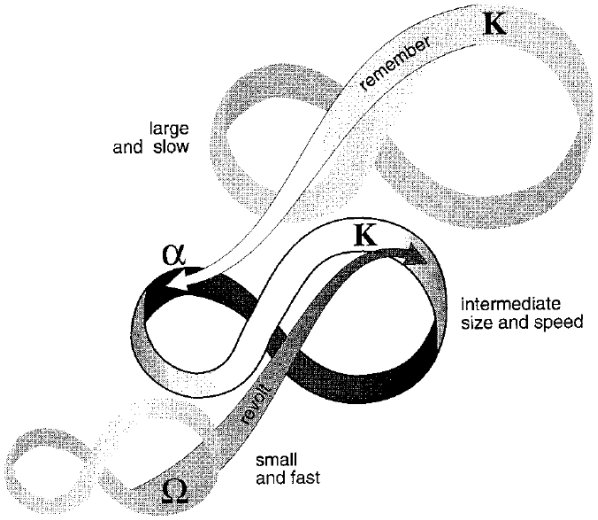


unexpressed chance mutations and inventions. The exit from the cycle (α to r) signifies where lost potential will most likely cause a flip into a less productive and less organized system. (Ibid, p.394)



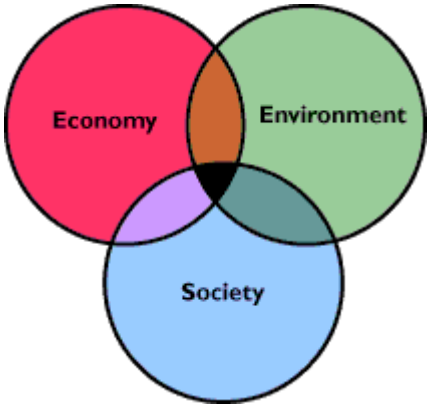
As the adaptive cycle operates system resilience fluctuates. The α phase (where connectedness and internal regulation is low and both potential and resilience high) is a point where invention and experimentation occur. A time of both crisis and opportunity (Ibid, p.396-397).

There are two cross-scale connections in panarchy critical for creating and maintaining adaptive capability –revolt and remembrance. *Revolt* can cause a critical change in one cycle and cascade to still higher, slower levels, particularly if those levels have also accumulated vulnerabilities and rigidities (i.e. the rapid expansion of an action or ideas). *Remember* facilitates renewal by drawing on the potential that has been accumulated and stored in a larger, slower cycle. This is important during times of change and renewal. Once a catastrophe is triggered at one level, the opportunities for, or constraints against, the renewal of the cycle are strongly influenced by the K phase of the next slower and larger level (Ibid, p.398).



Appendix 5: Models of Sustainability

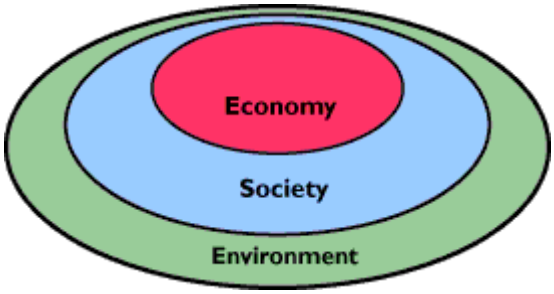
Interlapping spheres or Weak Model of sustainablility:



(Areas of overlap of two spheres represent the GE (Brown), SE (Purple) and environmental legislation or policy derived from civic or governmental actions (Dark Blue). The intersection of all three spheres represnts sustainable development.

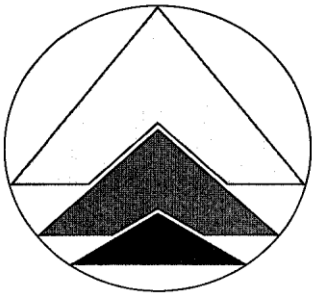
(Source: Sustainable Measures)

Concentric Circles or Strong Model of sustainablility:



Here the circles demonstrate dependence upon those by which they are engulfed. This symbol was most likely derived from the World Conservation Strategy of 1980. (Source: Sustainable Measures)

Biosphere Conservation



The circle symbolizes the biosphere, of which all life on Earth depends. The interlocking/overlapping arrows represent the objectives of conservation:

- Maintenance of essential ecological processes and life-support systems.
- Preservation of genetic diversity;
- Sustainable utilization of species and ecosystems.

(Source: IUCN, 1980, p. I)

Appendix 6: The Social Economy as a Third Sector

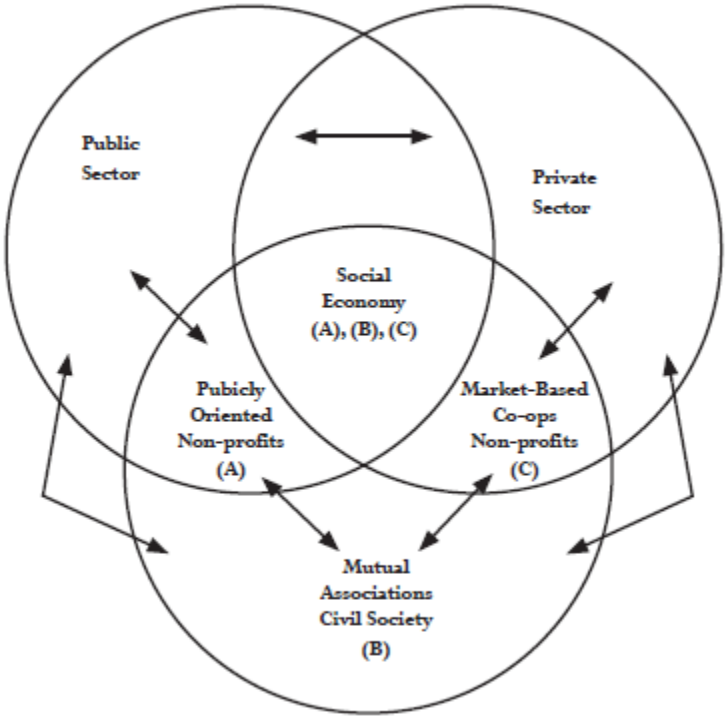


Figure 1.2. The Social Economy and Civil Society. Source: Quarter et al. (2001)

(As cited in Tremblay, 2012, p.21)

Appendix 7: Who Qualifies?

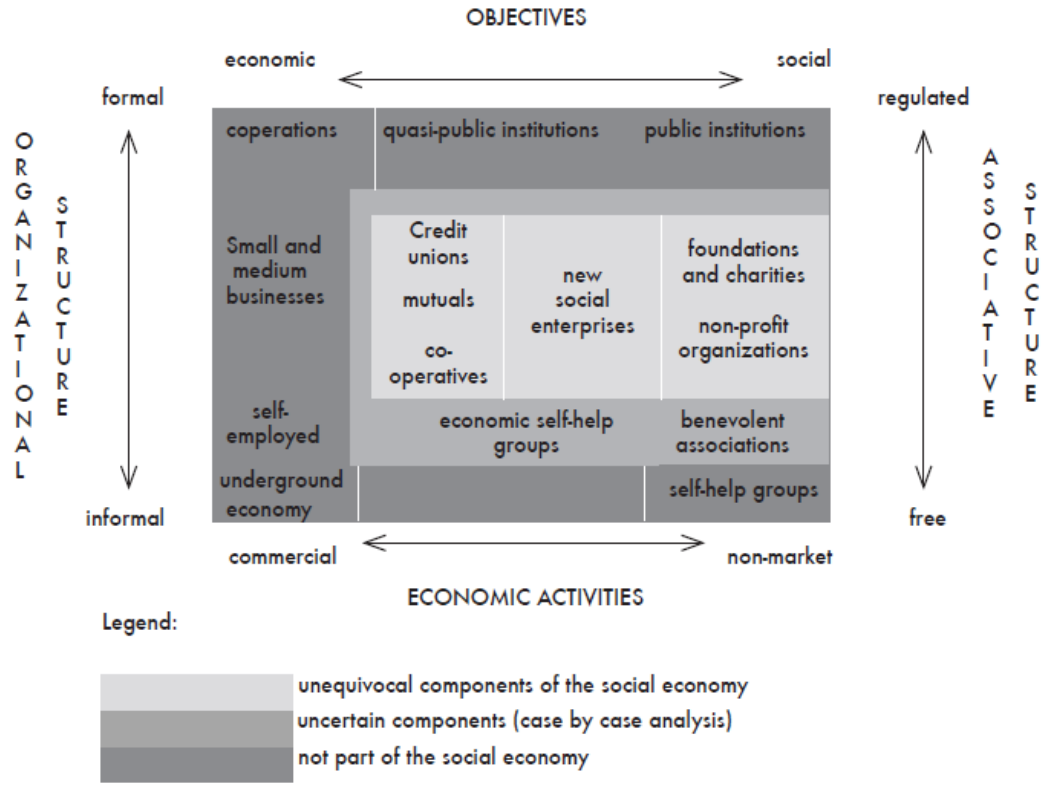
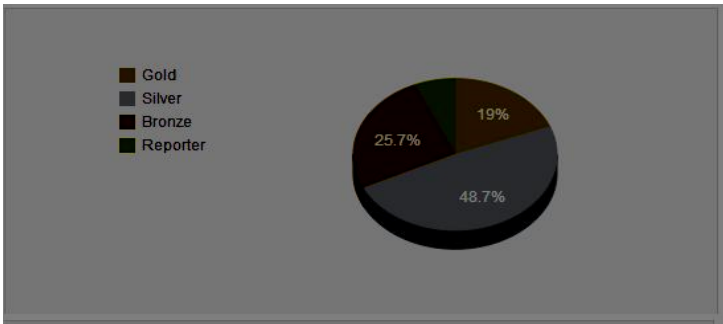


Figure 1.1. The Social Economy Quadrilateral. Source: Ninacs (2002)

(As cited in Tremblay, 2012, p.19)

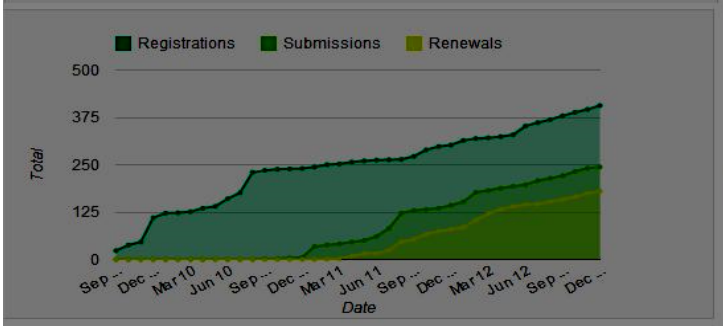
Appendix 8: Stars Ratings 2012



STARS Ratings

Platinum	0
Gold	43
Silver	110
Bronze	58
Reporter	15

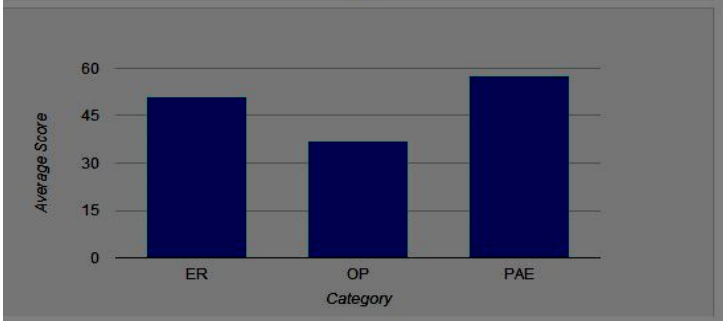
Totals for all versions of STARS.



STARS Registrations and Submissions

Registrations	406
Submissions	244
Renewals	180

STARS Registrations, Submissions, and Renewals over time.

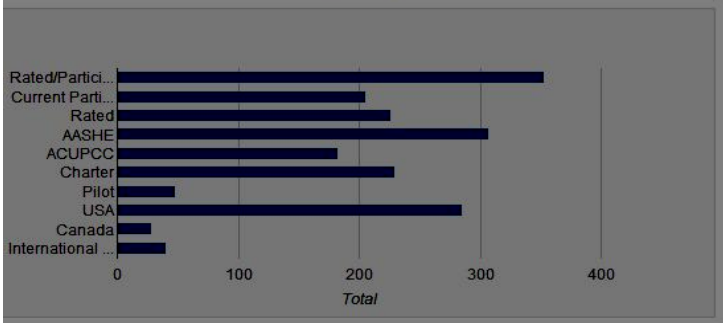


Average Category Scores

Education & Research (ER)	51.09%
Operations (OP)	36.84%
Planning, Administration & Engagement (PAE)	57.48%

Average scores for all STARS Rated institutions.

See more Average Scores Visually.



STARS Institutions Breakdown

Participating and/or Rated	353
Current STARS Participants	205
Rated Institutions	226
AASHE Members	307
ACUPCC Signatories	183
US Institutions	285
Canadian Institutions	28
International Pilot Participants	40
Charter STARS Participants	229
STARS Pilot Participants	48

Note: The figures listed above all apply to institutions that are either Rated or current STARS Participants, with the exception of Charter and Pilot Participants, who may or may not be Rated or current Participants.

Sourced from: STARS Dashboard:Summary

Appendix 9: STARS Credit Checklist 2012

STARS 1.2 Credit Checklist		
Category 1: Education & Research (ER)		
Credit Number	**Credit Title**	**Possible Points**
Co-Curricular Education		
ER 1	Student Sustainability Educators Program	5
ER 2	Student Sustainability Outreach Campaign	5
ER 3	Sustainability in New Student Orientation*	2
ER 4	Sustainability Materials and Publications	4
Co-Curricular Education Tier Two Credits		
ER T2-1	Student Group	0.25
ER T2-2	Organic Garden*	0.25
ER T2-3	Model Room in Residence Hall*	0.25
ER T2-4	Themed Housing*	0.25
ER T2-5	Sustainable Enterprise	0.25
ER T2-6	Sustainability Events	0.25
ER T2-7	Outdoor Program	0.25
ER T2-8	Themed Semester or Year*	0.25
Co-Curricular Education Total Points		18
Curriculum		
ER 5	Sustainability Course Identification	3
ER 6	Sustainability-Focused Courses	10
ER 7	Sustainability-Related Courses	10
ER 8	Sustainability Courses by Department*	7
ER 9	Sustainability Learning Outcomes*	10
ER 10	Undergraduate Program in Sustainability*	4
ER 11	Graduate Program in Sustainability*	4
ER 12	Sustainability Immersive Experience*	2
ER 13	Sustainability Literacy Assessment	2
ER 14	Incentives for Developing Sustainability Courses	3
Curriculum Total Points		55
Research		
ER 15	Sustainability Research Identification*	3
ER 16	Faculty Engaged in Sustainability Research*	10
ER 17	Departments Engaged in Sustainability Research*	6
ER 18	Sustainability Research Incentives*	6
ER 19	Interdisciplinary Research in Tenure and Promotion*	2
Research Total Points		27
Total ER Points		100
* credit does not apply to all institutions		

STARS 1.2 Credit Checklist

Category 2: Operations (OP)

Credit Number	Credit Title	Possible Points
	Buildings	
OP 1	Building Operations and Maintenance	7
OP 2	Building Design and Construction*	4
OP 3	Indoor Air Quality	2
	Buildings Total Points	13
	Climate	
OP 4	Greenhouse Gas Emissions Inventory	2
OP 5	Greenhouse Gas Emissions Reduction	14
	Climate Tier Two Credits	
OP T2-1	Air Travel Emissions	0.25
OP T2-2	Local Offsets Program	0.25
	Climate Total Points	16.5
	Dining Services	
OP 6	Food and Beverage Purchasing*	6
	Dining Services Tier Two Credits	2.5
OP T2-3	Trayless Dining	0.25
OP T2-4	Vegan Dining	0.25
OP T2-5	Trans-Fats	0.25
OP T2-6	Guidelines for Franchisees	0.25
OP T2-7	Pre-Consumer Food Waste Composting	0.25
OP T2-8	Post-Consumer Food Waste Composting	0.25
OP T2-9	Food Donation	0.25
OP T2-10	Recycled Content Napkins	0.25
OP T2-11	Reusable Container Discounts	0.25
OP T2-12	Reusable To-Go Containers	0.25
	Dining Services Total Points	8.5
	Energy	
OP 7	Building Energy Consumption	8
OP 8	Clean and Renewable Energy	7
	Energy Tier Two Credits	
OP T2-13	Timers for Temperature Control	0.25
OP T2-14	Lighting Sensors	0.25
OP T2-15	LED Lighting	0.25
OP T2-16	Vending Machine Sensors	0.25
OP T2-17	Energy Management System	0.25
OP T2-18	Energy Metering	0.25
	Energy Total Points	16.5

Grounds		
OP 9	Integrated Pest Management*	2
Grounds Tier Two Credits		
OP T2-19	Native Plants*	0.25
OP T2-20	Wildlife Habitat*	0.25
OP T2-21	Tree Campus USA*	0.25
OP T2-22	Snow and Ice Removal*	0.25
OP T2-23	Landscape Waste Composting*	0.25
Grounds Total Points		3.25
Purchasing		
OP 10	Computer Purchasing	2
OP 11	Cleaning Product Purchasing	2
OP 12	Office Paper Purchasing	2
OP 13	Vendor Code of Conduct	1
Purchasing Tier Two Credits		
OP T2-24	Historically Underutilized Businesses	0.25
OP T2-25	Local Businesses	0.25
Purchasing Total Points		7.5
Transportation		
OP 14	Campus Fleet	2
OP 15	Student Commute Modal Split	4
OP 16	Employee Commute Modal Split	3
Transportation Tier Two Credits		
OP T2-26	Bicycle Sharing	0.25
OP T2-27	Facilities for Bicyclists	0.25
OP T2-28	Bicycle and Pedestrian Plan	0.25
OP T2-29	Mass Transit Programs	0.25
OP T2-30	Condensed Work Week	0.25
OP T2-31	Telecommuting	0.25
OP T2-32	Carpool/Vanpool Matching	0.25
OP T2-33	Cash-out Parking	0.25
OP T2-34	Carpool Discount	0.25
OP T2-35	Local Housing	0.25
OP T2-36	Prohibiting Idling	0.25
OP T2-37	Car Sharing	0.25
Transportation Total Points		12

	Waste	
OP 17	Waste Reduction	5
OP 18	Waste Diversion	3
OP 19	Construction and Demolition Waste Diversion*	1
OP 20	Electronic Waste Recycling Program	1
OP 21	Hazardous Waste Management	1
	Waste Tier Two Credits	
OP T2-38	Materials Exchange	0.25
OP T2-39	Limiting Printing	0.25
OP T2-40	Materials Online	0.25
OP T2-41	Chemical Reuse Inventory	0.25
OP T2-42	Move-In Waste Reduction*	0.25
OP T2-43	Move-Out Waste Reduction*	0.25
	Waste Total Points	12.5
	Water	
OP 22	Water Consumption	7
OP 23	Stormwater Management	2
	Water Tier Two Credits	
OP T2-44	Waterless Urinals	0.25
OP T2-45	Building Water Metering*	0.25
OP T2-46	Non-Potable Water Usage	0.25
OP T2-47	Xeriscaping*	0.25
OP T2-48	Weather-Informed Irrigation*	0.25
	Water Total Points	10.25
	Total OP Points	100
* credit does not apply to all institutions		

STARS 1.2 Credit Checklist

Category 3: Planning, Admin. & Engagement (PAE)

Credit Number	Credit Title	Possible Points
	Coordination and Planning	
PAE 1	Sustainability Coordination	3
PAE 2	Strategic Plan*	6
PAE 3	Physical Campus Plan*	4
PAE 4	Sustainability Plan	3
PAE 5	Climate Action Plan	2
	Coordination and Planning Total Points	18
	Diversity and Affordability	
PAE 6	Diversity and Equity Coordination	2
PAE 7	Measuring Campus Diversity Culture	2
PAE 8	Support Programs for Underrepresented Groups	2
PAE 9	Support Programs for Future Faculty	4
PAE 10	Affordability and Access Programs	3
	Diversity and Affordability Tier Two Credits	
PAE T2-1	Gender Neutral Housing*	0.25
PAE T2-2	Employee Training Opportunities	0.25
PAE T2-3	Student Training Opportunities	0.25
	Diversity and Affordability Total Points	13.75

Human Resources		
PAE 11	Sustainable Compensation	8
PAE 12	Employee Satisfaction Evaluation	2
PAE 13	Staff Professional Development in Sustainability	2
PAE 14	Sustainability in New Employee Orientation	2
PAE 15	Employee Sustainability Educators Program	5
Human Resources Tier Two Credits		
PAE T2-4	Childcare	0.25
PAE T2-5	Employee Wellness Program	0.25
PAE T2-6	Socially Responsible Retirement Plan	0.25
	Human Resources Total Points	19.75
Investment		
PAE 16	Committee Investor Responsibility*	2
PAE 17	Shareholder Advocacy*	5
PAE 18	Positive Sustainability Investments*	9
Investment Tier Two Credits		
PAE T2-7	Student-Managed Sustainable Investment Fund*	0.25
PAE T2-8	Sustainable Investment Policy*	0.25
PAE T2-9	Investment Disclosure*	0.25
	Investment Total Points	16.75
Public Engagement		
PAE 19	Community Sustainability Partnerships	2
PAE 20	Inter-Campus Collaboration on Sustainability	2
PAE 21	Sustainability in Continuing Education*	7
PAE 22	Community Service Participation	6
PAE 23	Community Service Hours	6
PAE 24	Sustainability Policy Advocacy	4
PAE 25	Trademark Licensing *	4
Public Engagement Tier Two Credits		
PAE T2-10	Graduation Pledge	0.25
PAE T2-11	Community Service on Transcripts	0.25
PAE T2-12	Farmer's Markets	0.25
	Public Engagement Total Points	31.75
	Total PAE Points	100

* credit does not apply to all institutions

STARS 1.2 Credit Checklist

Category 4: Innovation (IN)

Credit Number	Credit Title	Value
IN 1	Innovation Credit 4	1
IN 2	Innovation Credit 4	1
IN 3	Innovation Credit 4	1
IN 4	Innovation Credit 4	1
	Total IN Points	4

Appendix 10: Semi-Structured Interview Guide

- In your opinion does sustainable development aid in enhancing the reputation of a university?
    - If so, how?
- If Concordia wants to pursue Sust. Dev., Where, why, and how does Concordia University do this, and just how valuable is it?
    - Is **curriculum**, **infrastructure**, **economics**, or **community relations** stressed more than others?
- In your opinion does sustainability at Concordia University affect perceived values, satisfactions, and loyalty of its community (i.e. its prestige[91])?
    - If so, what examples come to mind?
- Do you know Concordia's assumed impact on the Knowledge economy (municipally, provincially, nationally, and internationally)?
    - What disciplines add most to the knowledge economy?
    - To what degree are sustainability focused schools adding to this economy?
- Is Concordia's impact on the Social economy measurable?
    - Do community relationships and community impact help increase reputation and prestige?
- Is Concordia's impact on the Green economy measurable?
    - How is Concordia most contributing?
- Are any of these economic sub-sectors being prioritized? Why? How?
- What is your role at Concordia University? Please provide a brief description of your daily tasks, projects you manage (sustainability-related or otherwise).
    - Does your position help enhance brand recognition/ the reputation of Concordia?
    - If Yes/ what actions do you take to facilitate these improvements?
    - How often do you utilize sustainability in any way to perform your duties?
    - In what ways?
- If Concordia is a brand name, what do you believe people first think of when they hear its name?
    - Does Concordia have an area of specialization?
    - What is its most known/recognizable department/school? Why do you think this is?
    - What aspects make Concordia a reputable University?
    - How is Concordia developing the same as and different from others?
    - What (if any) role does sustainability play?
- How high a priority is increasing brand recognition/ reputation for Concordia?
    - How often are you privy to discussions on this topic?
- Who are Concordia's main international competitors?
    - Is sustainability an aspect of this competition?
- How much do government regulations enhance or impede Concordia's reputation (i.e. price of tuition)?
- Does Concordia use specific aspects of sustainability or sustainable development to increase its reputation or prestige?

[91] This definition of prestige more accurately reflects the definition of reputation. Findings have been categorized appropriately in the research section.

Appendix 11: Canadian University Rankings

UNIVERSITY	THE (2014-15)	THE (2013-14)	ARWU (2014)*	ARWU in Canada (2014)	QS (2013-14)	QS in Canada	QS (2012-13)	Maclean's -2015	Maclean's* -2014	Maclean's* -2013
U of T	20	20	28	1	17	1	19	**2**	**3**	**3**
UBC	32	31	40	2	49	3	45	**3**	**2**	**2**
McGill	39	35	58	3	21	2	18	**1**	**1**	**1**
McMaster	94	92	92	4	140	6	152	**6**	**6**	**6**
U of Montreal	113	106	101-150	6	92	4	114	**10**	**11**	**14**
U of Alberta	124	109	101-150	5	96	5	108	**5**	**5**	**5**
U of Ottawa	188	185	201-300	15	227	11	240	**8**	**8**	**10**
U of Calgary	226-250	201-225	201-300	12	201	10	214	**12**	**9**	**8**
Laval U	226-250	201-225	201-300	9	329	14	324	**10**	**13**	**13**
U of Victoria	173	201-225	301-400	18	321	13	299	*2*	*1*	*2*
Queens	251-275	226-250	201-300	10	189	8	180	**4**	**4**	**4**
Simon Fraser	226-250	226-250	201-300	11	244	12	282	*1*	*2*	*1*
U of Waterloo	251-275	226-250	151-200	7	180	7	191	*3*	*3*	*3*
Dalhousie	226-250	276-300	201-300	8	244	12	243	**7**	**7**	**7**
Carleton U	226-250	276-300	401-500	19	501-550	21	501-550	*6*	*7*	*6*
York U	226-250	276-300	401-500	23	401-410	15	401-450	*8*	*9*	*8*
U of Manitoba	251-275	301-350	301-400	17	431-440	18	401-450	**12**	**14**	**15**
U of Guelph		351-400	201-300	14	461-470	19	401-450	*5*	*5*	*5*
Western U	226-250		301-400	13	199	9	173	**8**	**9**	**11**
U of Sask			201-300	16	421-430	17	393	**14**	**12**	**9**
Concordia			401-500	20	481-490	20	501-550	*11*	*13*	*13*
U of Quebec			401-500	21	411-420	16	401-450			
U Sherbrooke			401-500	22	441-450	18	N/A	**15**		
Memorial					601-650	22	N/A	*6*	*5*	*6*
Ryerson U					701+	23	N/A	*8*	*10*	*12*
U of Winsor					701+	24	N/A	*10*	*10*	*10*
U of NB								*4*	*4*	*4*
U of Regina								*10*	*8*	*9*
Wilfrid Laurier								*13*	*10*	*11*
UQAM								*14*	*14*	*14*
Brock								*15*	*15*	*15*

Note* for Maclean's ranking the Medical Doctorial category is bolded, the *Comp-rehensive* is in italicized

(Sourced from: Academic Ranking of World Universities, 2014; Maclean's 2014b;2014c; QS Top Universities 2014; Times Higher Education, 2015)

Appendix 12: Marketing Campaign Messages 2009-2014.

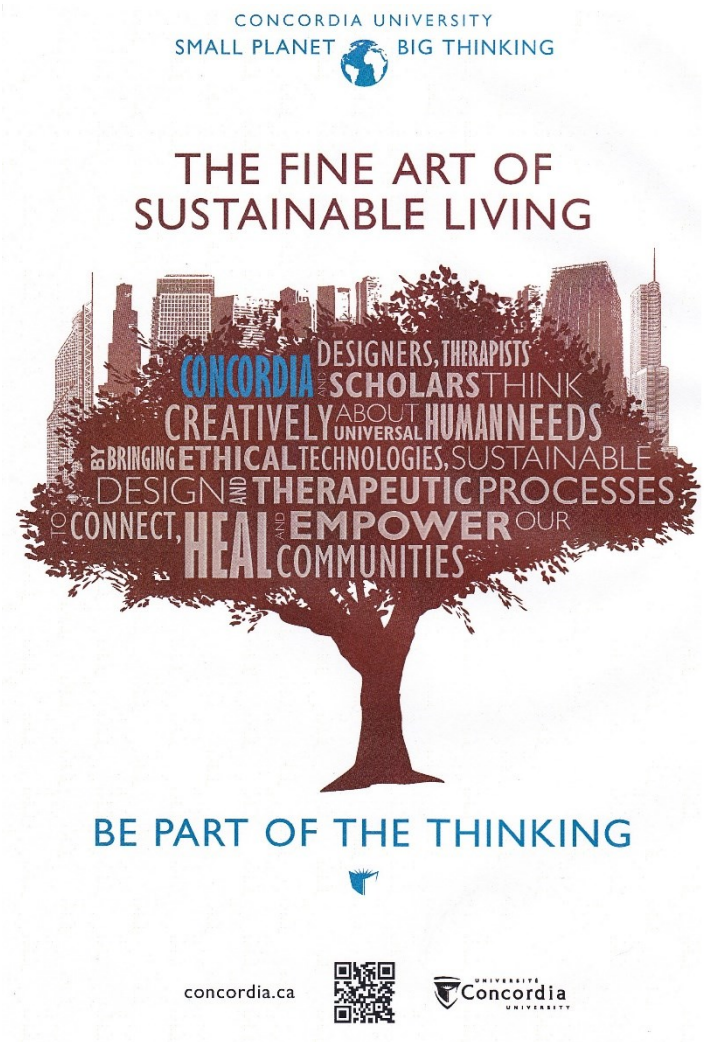
Slogan in English: 2009-2014: Small Planet Big Thinking: Be part of the thinking.
Slogan in French 2009-2010: Le Monde Est petit nous voyons grand: Concordia pour voir grand.
The world is small, we think big: Concordia to see big
Slogan in French 2010-2014: Le Monde Est petit nous voyons grand: Ensemble repensons le monde.
The world is small, we think big: Together rethinking the world

*Note all *italicized* text represents a sustainable action under the given definition.

2009-2010		
	Main Message	**Sub-text**
Blue Highlights	*CVAP creates village to help children with HIV in Uganda*	*Grant to explore radio and internet broadcast systems in Africa*
	More Concordia alumni in top fortune 500 than any other canadian university	Social impacts of Gaming and virtual gaming
	Genomics scientists lead biofuel and bioproduct research	Professor at for front of IT and cyber terrorism
	Professor heads the NSERC Solar Buildings Research Network at Concordia	*Undergrad Rhodes scholar leads obesity and diabetes*
Green Highlights	*Researcher proves definitive link between carbon emissions and climate change.*	*Human rights studies on policy against genocide and mass attrocities.*
	Professor develops small scale urban wind turbine.	
	First Quebec Institution to compost its organic waste.	Centre of oral history on peoples survival and resilience
	professor recieves candian prize for action against HIV/AIDS.	*University of the Streets Café: Concordia opens community dialogue in public places.*
Yellow Highlights	*Students raise $42,000 for the homeless.*	
	Sociologist suggests shift in sustainable agricultural practices.	
	Professor proves 126 year old physics theory	
	Theatre program promotes social change and activism.	

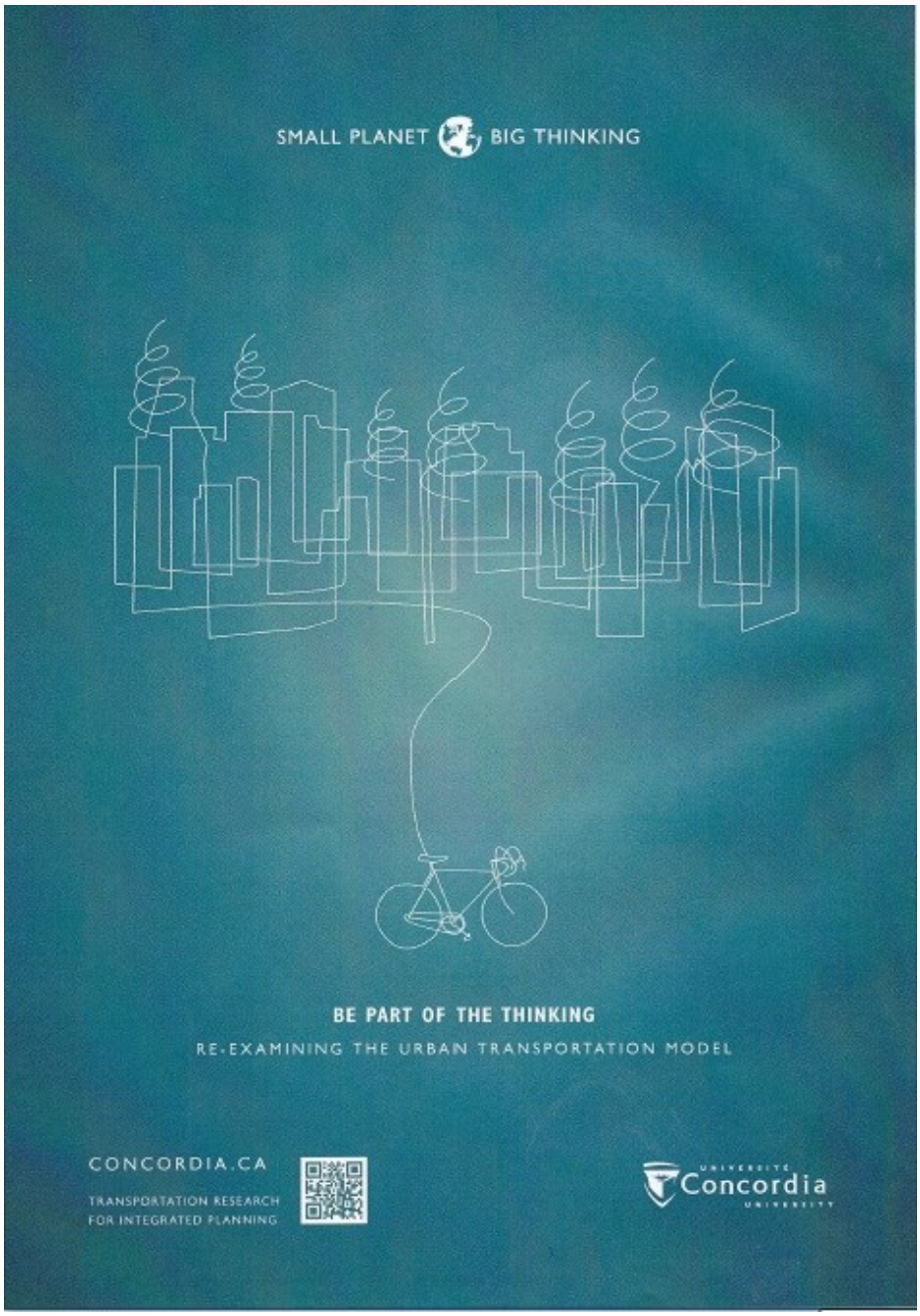
2010-2011	
JMSB management win gold 2009 and 2010 L'onium	*Business students sleep in streets to raise money for the homeless.*
Students create Cinema Politica for citizen engagement and social change	*Professor heads the NSERC Solar Buildings Research Network at Concordia*
JMSB students outperform benchmarks with 1million investment portfolio	*Theatre program promotes social change and activism.*
researcher reawakens memories with textiles	*CVAP creates village to help children with HIV in Uganda*
Journalism students win 14 CBC Joan Donaldson Scholarships since 1999.	*Undergrad Rhodes scholar leads obesity and diabetes*
DOCSE promotes social and ecologically sustainable business	*First university wide composting.*
For the 13th consecutive year Concordia is the most energy efficient Quebec university.	*University of the Streets Café: Concordia opens community dialogue in public places.*
First university in Quebec to recognize volunteer initiatives through co-curricular record.	*Montreal Institute of genocide and human rights influences American policy on genocide and mass atrocities.*
Greenhouse grows 15,000 plants for community gardens.	*First university to compost 100 tonnes of organic waste.*
Professor receives Trudeau grant for work to resolve conflict in africa.	*Genomics Scientists lead biofuel and bio-products.*
Professor develops small scale urban wind turbine.	Centre of oral history on peoples survival and resilience
Professor proves 126 year old physics theory	

2011-2012
We defend human rights against genocide and mass atrocities.
We run on green energy: Concordia thinks sustainably: solar, wind, building performance and genomics for biofuels.
Preventative health care: perform centre.
Analyse financial markets, Sustainable commerce and enterprise.
Hexagram institute: smart textiles, Interactive arts and design
Free and open access publicly funded research results.
Beyond the occupation [student strikes]community involvement & co-curricular record to promote globally aware citizens
Social and Cognitive development. Reduce anxiety, addiction & obesity.
Institute of Aerospace design and innovation: safety, performance, autopilot, robotics.
Fine art of sustainable living: designers, therapists and scholars for ethical technology, sustainable design and therapeutic process to connect, heal and empower community.



2012-2013
Conclusive evidence of global warming: Loyola Centre of Sustainability research
A net zero building: solar and climate simulator
Music moves art and society: School of Fine Arts
Socially and ecologically sustainable business: DOCSE
Healthier world: Perform Centre

2013-2014
Developing off grid technology: Centre for zero energy building studies
Preventative medicine: Perform Centre
Canadian Centre of Sustainable Supply chain management
Addiction and Desire: Center for studies in behavioral neurobiology.
Re-examining urban transportation: Transportation research for integrated planning (image of bicycle from polluting city).
Intersection of art tech, social awareness and cultural research: technoculture and games.



Appendix 13: Developing Concordia's CRC

Table 1. The Person and Society: Research chairs and CFI funding

CRC Tier 1	CRC Tier 2	Other research chairs	Total number of Chairs	Share of total funding from CFI [1]
I. Development and Well-being across the Lifespan and across Life Domains				
NSERC – 1M	NSERC – 1M CIHR – 1M SSHRC – 1M	5F, 9M	18	12 %
II. Identity, Expression, and Culture				
–	SSHRC – 2M	5F, 3M	10	36 %
III. Human Systems in a Global World				
SSHRC – 1M	SSHRC – 2F, 3M	2F, 10M	18	2%

Table 2. Technology, Industry, and the Environment: Research chairs and CFI funding

CRC Tier 1	CRC Tier 2	Other research chairs	Total number of Chairs	Share of total funding from CFI [1]
I. Enabling Technologies and their Basic Foundations				
NSERC – 3M	NSERC – 2M	--	15	16%
II. Advanced Materials and Nanotechnology				
-	NSERC – 1M	4M, 1F	6	15%
III. Energy, Environment, and Bioproducts				
NSERC – 1M	NSERC – 1M	1F, 3M; (2 IRCs – tbd)	6	19%

(Source: Concordia University, 2009, p.4)

Research Chairs by Theme and Agency

Research Theme	Canada Research Chairs					Concordia University Research Chairs				Other Chairs		Total by Theme		
	Agency	Tier 1		Tier 2		Tier 1		Tier 2						
		M	F	M	F	M	F	M	F	M	F	M	F	Total
1. Development and Well-Being of the Person Across the Lifespan	CIHR			3	1	4	3	1	1	0	2	12	8	20
	NSERC	1		2										
	SSHRC			1	1									
	TOTAL	1	0	6	2									
2. Culture, History and Identity	CIHR					2	2	3	3	4	1	12	9	21
	NSERC													
	SSHRC		1	3	2									
	TOTAL	0	1	3	2									
3. Human Systems and Organization	CIHR					4	0	1	2	7	3	14	5	19
	NSERC													
	SSHRC			2										
	TOTAL	0	0	2	0									
4. Enabling Technologies and their Basic Foundations	CIHR					5	1	6	0	1	0	14	1	15
	NSERC	1		1										
	SSHRC													
	TOTAL	1	0	1	0									
5. Advanced Materials and Technology	CIHR					4	0	1	1	1	0	8	1	9
	NSERC	1		1										
	SSHRC													
	TOTAL	1	0	1	0									
6. Energy, Environment and Biotechnologies	CIHR					2	1	2	0	1	0	7	1	8
	NSERC			2										
	SSHRC													
	TOTAL	0	0	2	0									
Total by Chair Type		3	1	15	4	21	7	14	7	14	6	67	25	92

(Source: Concordia University, 2013a, p.17)

Appendix 14: Major Research Clusters, Unifying Themes and Domains of Excellence

TABLE 1

Major Research Clusters, Unifying Themes and Domains of Excellence

THE PERSON AND SOCIETY	TECHNOLOGY, INDUSTRY AND THE ENVIRONMENT
Development and Well-being of the Person across the Lifespan » Learning, development and cognitive science » Public and population health » Fundamental science in health research	**Enabling Technologies and their Basic Foundations** » Fundamental science » Information technologies and computation » Telecommunications
Culture, History and Identity » Creative expression and production » Media, communications gender and sexuality » People, places and heritage	**Advanced Materials and Technology** » Composites, aerospace, transportation and manufacturing » Nano/Microtechnology
Human Systems and Organization » Corporate enterprise and entrepreneurship » Social organization and resource planning » Social and economic systems	**Energy, Environment and Biotechnologies** » Environmental science and engineering » Energy and sustainable technologies » Omics and related biotechnologies

Source: (Concordia University, 2013a, p.17)

Appendix 15: Concordia's Centres and Institutes

Year	Development	Category	Cluster	Learning Type	Highlight	Sustainability Factor
1963	Centre for Human Relations and Community Studies	Arts & Sci	1	Cross	Action Research. Training. Community	Humanitarianism
1964	Centre for Continuing education	N/A	1	Multi	Courses	N/A
1975	Concordia Centre for Broadcasting and Journalism Studies	Senate	1	Multi	CBC Archives	N/A
1979	Concordia Centre for Composites	Senate	2	No	R&D	Green Economy
1980	Institute for Cooperative Education	N/A	1	Multi	Exp. Learning. Community	N/A
1981	Centre for Research in Human Development	Senate	1	Inter	Interuniversity R&D	Humanitarianism
1983	Center for Studies in Behavioral Neurobiology	Senate	1	No	Interuniversity R&D	N/A
1984	Centre for Small Business and Entrepreneurial Studies	JMSB	1	No	Training. Community	N/A
1986	Montreal Institute of Genocide and Human Rights	Senate	1	Inter	International Rep. Leaders	Humanitarianism
1988	Centre for the Study of Learning and Performance	Senate	1	Multi	Interuniversity R&D on education technology. Working with Kenya.	Humanitarianism
1988	Karl Polanyi Institute of Political Economy	Senate	1	Multi	International Rep. Research	Social Economy
1988	Centre for Pattern Recognition and Machine Intelligence	Senate	2	Multi	R&D	N/A
1993	Institute for Community Entrepreneurship and Development	JMSB	1	No	Community	Social Economy
1996	The Centre for the Arts in Human Development	Senate	1	Inter	R&D	N/A
2000	Centre for Research in Molecular Modeling	Senate	2	Inter	Interuniversity R&D	Green Economy
2001	Concordia Institute of Aerospace Design and Innovation	Engineer	2	Multi	R&D	Green Economy
2002	Hexagram Centre for Research-Creation in Media Arts and Technologies	Senate	1	inter	R&D	N/A
2002	Concordia Institute for Information Systems Engineering	Engineer	2	No	R&D	Green Economy
2005	Institute for governance of public and private organizations	JMSB	1	Multi	Interuniversity R&D	N/A
2005	InterNeg Research Centre	JMSB	2	Inter	Human Centred R&D	N/A
2005	Gail and Stephen A. Jarislowsky Institute for Studies in Canadian Art	Fine Arts	1	No	Research	N/A
2006	Centre of Oral History and Digital Story Telling	Senate	1	Multi	Research. Community	N/A

Concordia's Centres and Institutes						
Year	**Development**	**Category**	**Cluster**	**Learning Type**	**Highlight**	**Sustainablility Factor**
2007	Centre for Interdisciplinary Studies in Society and Culture	Arts & Sci	1	Multi	Research	N/A
2007	Desjardins Centre for Innovation in Business Finance	JMSB	1	No	Research	N/A
2008	Centre for Ethnographic Research and Exhibition in the Aftermath of Violence	Arts & Sci	1	Inter	Research	Humanitarianism
2009	TAG - Technoculture, Arts and Games	Senate	2	Inter	R&D. Community	Humanitarianism
2009	David O'Brien Centre for Sustainable Enterprise	JMSB	1	Multi	Sustainablity in Business & Community Events.	Sustainable Development
2009	Centre for Multidisciplinary Behavioural Business Research	JMSB	1	Multi	Research	N/A
2009	Research Centre in Accountability	JMSB	1	No	Sustainable Accounting	N/A
2011	Centre for Structural and Functional Genomics	Senate	2	Multi	World Leader in developing resource based bioeconomy	Green Economy
2011	Centre for NanoScience Research	Senate	2	No	R&D	Green Economy
2011	Centre for Biological Applications of Mass Spectrometry	Senate	2	No	R&D	N/A
2011	Centre of applied Synthetic Biology	Arts & Sci	2	No	R&D. Biofuel	Green Economy
2011	Azrieli Institute of Israel Studies	Arts & Sci	1	Multi	Research	N/A
2011	PERFORM Centre	N/A	1	Yes	Preventative Healthcare	Humanitarianism
2011	Centre for Zero Energy Building Studies	Senate	2	No	Sustainability	Green Economy
2011	Centre of Microscopy	Arts & Sci	2	Multi	R&D	N/A
2011	Centre for Engineering in Society	Engineer	2	Yes	R&D	N/A
2012	Luc Beauregard Centre of Excellence in Communications Research	JMSB	1	No	Communication. PR Research	N/A
2012	Centre for Iranian Studies	Arts & Sci	1	Cross	Canadian First	N/A
2012	Centre for Sensory Studies	Arts & Sci	1	Inter	R&D	N/A
2012	Institute for Water, Energy and Sustainable Systems	Senate	2	Inter	Sustainability in engineering	Sustainable Development
2012	CN Centre for Studies in Sustainable Supply Chain Management	JMSB	1	No	Circular Economy	Circular Economy
2012	The Loyola Sustainability Research Centre	Arts & Sci	1 & 2	Trans	Climate Change & Biodiversity.	Sustainable Development
2013	District 3 Innovation Centre	N/A	2	Inter	R&D	Green and Social Economy
2013	Media History Research Centre	N/A	1	Inter	Research	N/A
2014	Centre for Teaching and Learning	N/A	1	Multi	Teaching	N/A
2014	Centre for clinical research in Health	Arts & Sci	1	No	Innovative studies	Humanitarianism

(Generated by author through various Concordia University websites and additional websites).

Appendix 16: NESSE Factors for Reputation and Prestige

Concordia Student's Level of Academic Challenge		
	Emphasis on studying and academic work (FY)	Faculty hold students to high standards (FY)
2012	79%	54%
2011	80%	53%

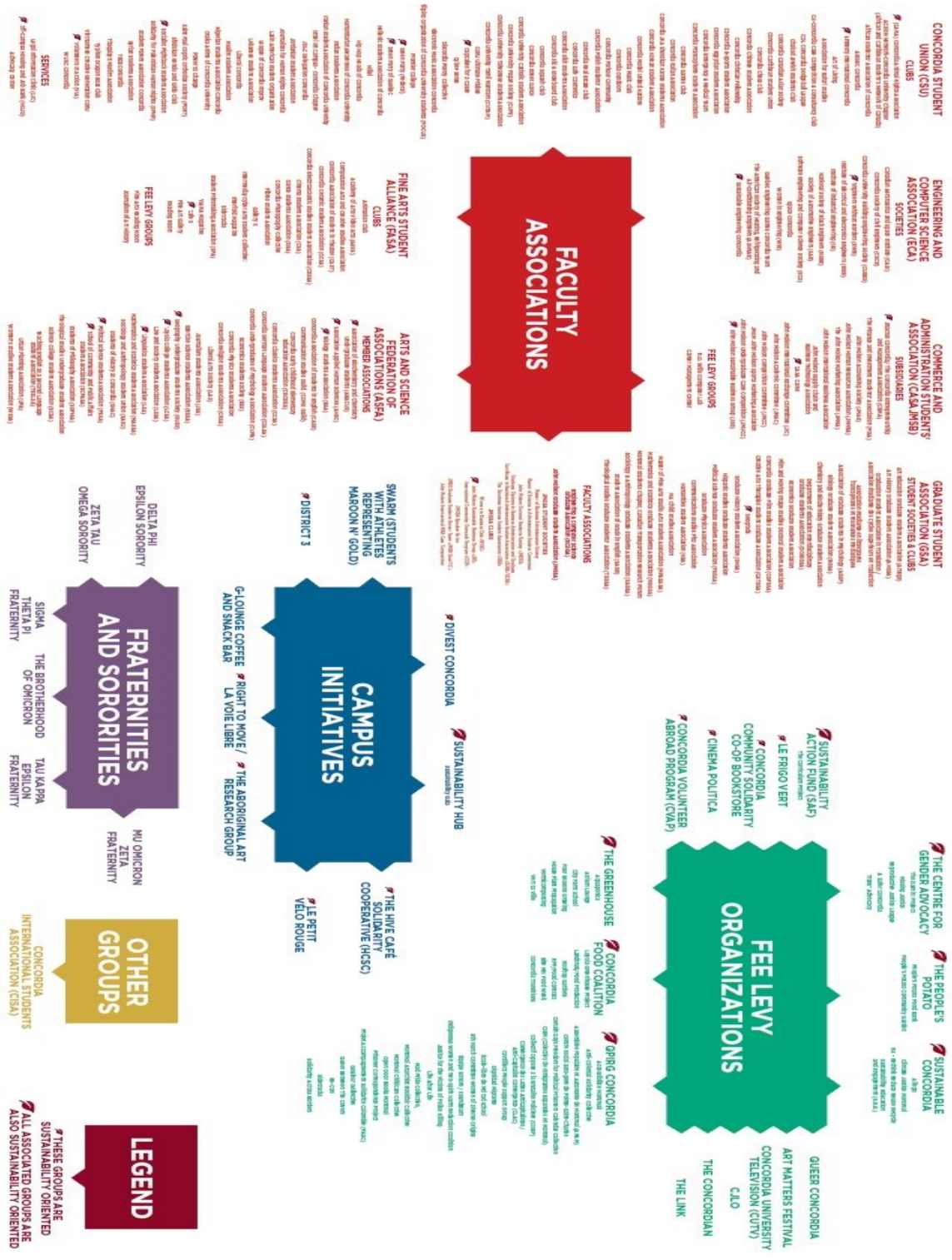
Concordia Student's Active and Collaborative Learning			
	Student Participation in community-based projects as part of their courses?	Never Took Part	Student apply class learning in real life through internships, preacticum, field experience, or clinical assignment.
2012	6%	81%	33% by SR
2011	5%	84%	35% by SR

Concordia's Student Faculty interaction				
	Faculty accessibility and support	Student work on research with Faculty	Discuss career plans with faculty or advisors	Student and faculty working on committees or projects outside of coursework
2012	68% FY	10% by SR	62% by SR; 38% Never	25% of FY at least occassionly
2011	42% FY	10% by SR	62% by SR; 38% Never	21% of FY at least occassionaly

Concordia Student's Enriched Educational Experience						
	Distinctive program offerings	Interact with different viewpoints	Interact with different ethnicities	Study Abroad	Enhance spirituality	Participate in community service
2012	8% FY learning community; 7% independent study by SR	54% FY	59% FY a serious conversation	10% by SR	15% FY frequently	41%
2011	7% FY learning community; 9% independent study by SR	52% FY	58% FY a serious conversation	11% by SR	12% FY Frequently	42%

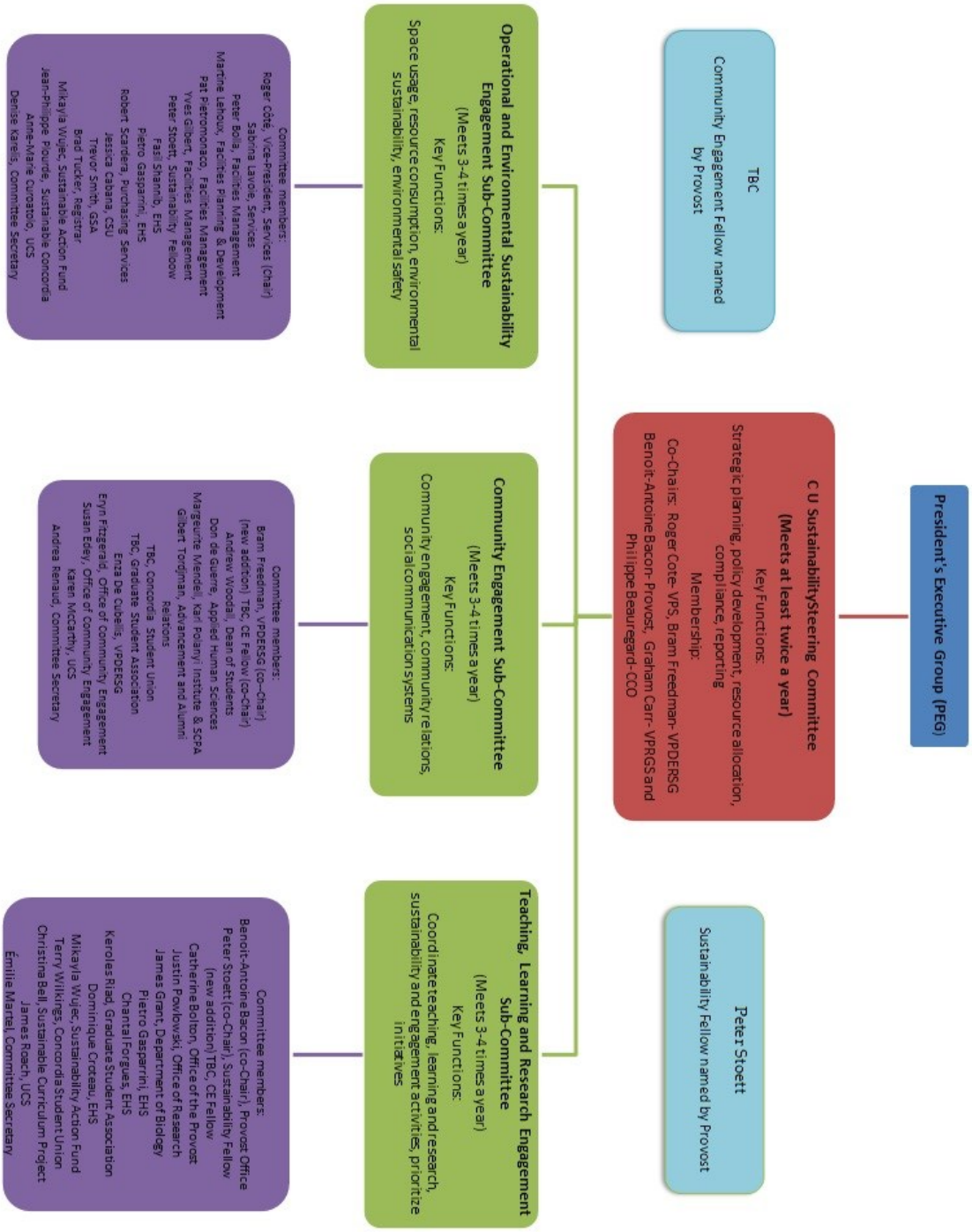
Concordia's Supportive Campus Environment					
	How friendly supportive, and accepting are other students	Students overall educational experience	Time deveoted to co-curricular activities	Find administrative personel helpful, considerate and flexible.	Degree to which the school helps with academic and social needs.
2012	73% FY	80%FY good-excellent; 82% SR would return to Concordia	14% for FY (5hrs); 69% do not participate	53%	67% positive for academic; 36% positive for social
2011	50% FY	78%FY good-excellent; 81% SR would return to Concordia	3% for FY (5hrs); 71% do not participate	29%	67% positive for academic; 36% positive for social

Appendix 17: Concordia's Student Groups



(Source: Office of the Vice-President of Services, 2014)

Appendix 18: Concordia University Sustainability Governance Framework (2014)



(Source: Office of the Vice-President of Services, 2014)

Appendix 19: Maclean's Ranking, STARS rating and Sustainable Leaders Compared

UNIVERSITY	Maclean's Top 15 2015	STARS 2015	Sustianable Leaders
McGill	**1**	10	Yes
U niversity of Toronto	**2**	Reporter	--
University of British Columbia	**3**	Expired (Gold 2011)	Yes
Queens	**4**	--	Yes
University of Alberta	**5**	2	Yes
McMaster University	**6**	Member	--
Dalhousie University	**7**	3	Yes
University of Ottawa	**8**	9	Yes
Western University	**8**	6	--
Laval University	**10**	1	--
University of Montreal	**10**	--	--
University of Calgary	**12**	5	Yes
University of Manitoba	**12**	Member	Yes
University of Sascatchewan	**14**	16	Yes
University Sherbrooke	**15**	--	--
Simon Fraser	*1*	7	--
University of Victoria	*2*	8	--
University of Waterloo	*3*	--	--
University of New Brunswick	*4*	Member	--
University of Guelph	*5*	--	--
Carleton University	*6*	Reporter	--
Memorial University	*6*	--	Yes
York University	*8*	Reporter	--
Ryerson University	*8*	--	--
University of Regina	*10*	Reporter	--
University of Winsor	*10*	Reporter	--
Concordia University	*11*	15	Yes
Wilfrid Laurier University	*13*	11	--
UQAM	*14*	--	--
Brock University	*15*	--	--
Royal Roads University	n/a	4	--
The Kings University	--	12	--
MacEwan University	--	13	Yes
Saint Mary's University	--	14	Yes
Northern Alberta Institute of Technology	--	17	Yes
Lakehead University	--	18	--
Vancouver Island University	--	--	Yes
University of Victoria	--	--	Yes
University of Winnipeg	--	Member	Yes
Bishops University	--	--	Yes
École Polytechnique de Montréal	--	--	Yes

Note* The Medical Doctorial category is bolded, the *Comprehensive* category is italicized