Abstract

Global focus on reaching emission reduction targets has shed light on the significance of household contributions to greenhouse gas (GHG) emissions. At the consumer level, 'going green' has become a popular trend aimed at curbing environmental impact and living in more sustainable ways. This paper explores the ways in which individuals are addressing these realities and adopting new lifestyle choices through broadband-enabled social networking initiatives. Presenting a case study of current practices to support sustainability using broadband networks, this paper demonstrates that an understanding of motivations, barriers to participation, and other factors determine the success of environmental campaigns.

INTRODUCTION

Climate change and environmental sustainability are topical interests in government agendas, newswires, classrooms, and marketplaces across most of the developed world. There is growing global consensus from notable sources such as the Intergovernmental Panel on Climate Change (IPPP) that Canada and other industrialized nations must reduce their total greenhouse gas (GHG) emissions 20-40% by 2020 if there is to be any concerted effort to reaching tolerable global warming levels (Bramley et., al 2009;Gupta et., al 2007). While emphasis is placed on government initiatives towards the environment, the incorporation of the individual's relationship to these priorities is imperative to the implementation of these policies. Therefore, widespread collaboration from different facets of society is needed to address pressing challenges. Because households are not seen as small polluters in a global context (Spaargaren and Mol 2009; Dietz et., al 2009), ordinary citizens *are* significant in reducing GHG emissions. Broadband Internet connectivity offers an appropriate technology for harnessing households' collective emissions reduction measures by facilitating personalized environmentalism for individuals and groups.

This paper describes how broadband networks can be used to support individuals' efforts to live their lives in more environmentally sustainable ways. It adds to the growing literature on broadband and sustainability, much of it published in the *Telecommunications Journal of Australia* (see Volumes 57(2/3) and 59(1), and Gerrand, 2009), and motivated by the Eckermann-TJA Alcatel-Lucent Broadband Challenge. This research addresses a range of issues, including the use of broadband to better manage water resources (Saleem, Wicks and Dassanayake 2009;Saunders, 2007), to support urban travel and vehicle management (Jones, 2009; Nairn 2007; Dennis and Thompson 2009), and to encourage more efficient generation and distribution of electricity (Dennis 2007; Herron 2009). However, research efforts examining the ways in which broadband networks can foster environmental participation online are nascent, and there remain significant knowledge gaps as to how individual involvement with environmental initiatives can be leveraged by interactive technologies found on the

web (Lester and Hutchins 2009; Hasbrouck and Woodruff 2008). The purpose of this research is to offer discussion around ideas and practices that inform these developing research areas. We argue that broadband-enabled environmental networks are effective in initiating pro-environmental behaviours online, yet the long-term sustainability of these networks requires a combination of online and offline efforts. The degree to which broadband is an enabler of environmental action for online social networks is discussed.

Motivating Change

Assessing how motivation, satisfaction, and social utility inform participation in emissions reduction strategies through online social networking sites is of interest. What motivates users to engage in environmentally focused projects online? In their exploratory study of green practice in households, Woodruff et., al (2008) found that "participants' motivations for taking environmental action were wide ranging: they included everything from religious values to a desire to save on home energy bills to new forms of patriotism that focus on reducing dependence on foreign oil" (p.315). Financial, altruistic, functional, status-enhancing, and reputational benefit are just some of the primary motivators for engaging in green-oriented activities (Griskevicius et., al 2009). But for the most part, our knowledge of pro-environmental motivators is general. Studies on demographic-specific motivations combined with informed communication strategies would improve awareness of how to best target specific groups. We do know that for communication to be effective towards environmental goals it must "sufficiently elevate and maintain the motivation to change a practice or policy and at the same time contribute to lowering the barriers" (Moser and Dilling 2007, p.502). Perceived barriers to environmental participation include lack of knowledge, contradictory information, and time constraints. Getting individuals to adopt pro-environmental behaviours is difficult, and advanced understanding of motivations and perceived barriers is needed (Kennedy et., al 2009). Furthermore, maintaining a positive environmental attitude in individuals becomes centrally important if an environmental campaign is going to succeed at attaining impact long-term.

Considering these enablers of environmentally sustainable behaviours, our objective is to explore whether motivations and barriers to participation can be enacted through broadband network adoption. We do know that there is increased emphasis on individuals to take environmentally responsible measures, and that effective environmental communication is necessary for these measures to be acted upon. The case study offers insights into motivations and behaviour patterns by individuals and groups that support sustainability using broadband.

CASE STUDY—ONE MILLION ACTS OF GREEN (OMAOG)

Public debate around environmental issues consists of many divergent viewpoints that compete for audience attention. As such, the public discourse is expanding beyond industry leaders, decision-makers, and pundits to include average citizens, reflecting growing public interest in both protecting the planet and adopting more sustainable behaviour patterns (Cox 2006; Johnston 2008; Moser & Dilling 2007; Russill & Nyssa 2009). Interactive communication technologies are a means to provide leverage for individuals and small groups to maximize their impact on environmental issues (Hasbrouck & Woodruff 2008).

As a part of the environmental landscape online, the web-based *One Million Acts of Green* campaign seeks to encourage environmental participation by providing green solutions to everyday environmental problems for ordinary individuals at home, school, and in the workplace**.** In thinking about this environmental model this case study[i] considers the following: How do the interactive possibilities of new media technologies motivate users to engage in environmentally focused projects online? What is the function of social networking tools in organizing environmental communities? How important is broadband technology in facilitating successful environmental goals?

BACKGROUND

One Million Acts of Green (OMAOG) was launched in Canada in October 2008 by Cisco—a multinational computer networking corporation—in partnership with the CBC (Canadian Broadcasting Corporation), and GreenNexxus, an online environmental community that provides software solutions for environmentally focused projects. The goal was to connect Canadians to environmental issues by engaging them in conversation with one another, and encouraging them to complete 'green acts'. Promoted as opportunities to help the environment, these 'acts of green' include activities that lower energy consumption, reduce water use, encourage recycling and reduce reliance on fossil fuels. Figure 1 shows a few suggested acts of green.

This activity was primarily enacted through online social networking (e.g. the OMAOG web site, http://green.cbc.ca/ and a Facebook group), social media tools (twitter), and television (CBC's daily broadcast of a news and talk show called *The Hour*). The campaign surpassed its national target of one million acts in just over one hundred days, with 65,000 Canadians going on to pledge close to 1.8 million acts to date. Through these individual acts of green, more than 100 million kilograms or one hundred thousand metric tonnes (t) [ii] of greenhouse gases were saved (CBC online; Corbyn 2009b).
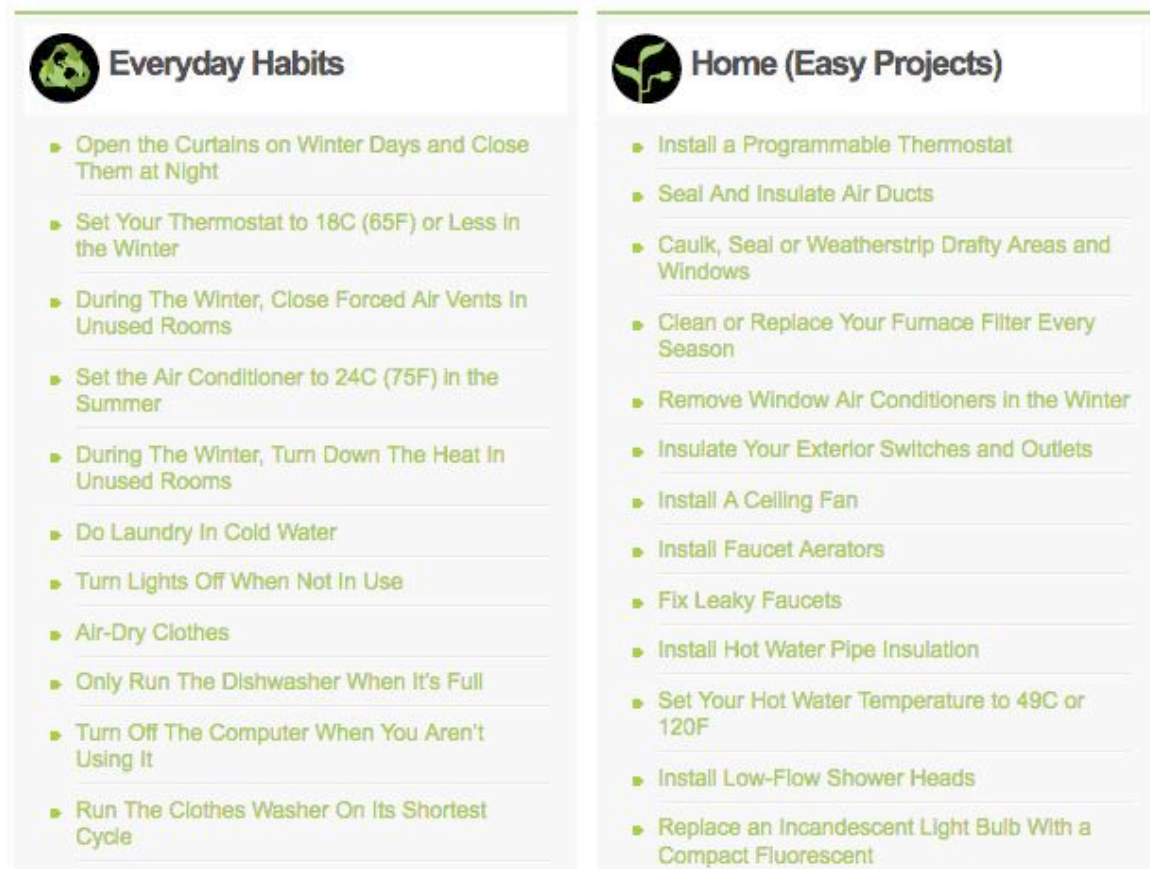
Everyday Habits

- Open the Curtains on Winter Days and Close Them at Night
- Set Your Thermostat to 18C (65F) or Less in the Winter
- During The Winter, Close Forced Air Vents In Unused Rooms
- Set the Air Conditioner to 24C (75F) In the Summer
- During The Winter, Turn Down The Heat In Unused Rooms
- Do Laundry In Cold Water
- Turn Lights Off When Not In Use
- Air-Dry Clothes
- Only Run The Dishwasher When It's Full
- Turn Off The Computer When You Aren't Using It
- Run The Clothes Washer On Its Shortest Cycle

Home (Easy Projects)

- Install a Programmable Thermostat
- Seal And Insulate Air Ducts
- Caulk, Seal or Weatherstrip Drafty Areas and Windows
- Clean or Replace Your Furnace Filter Every Season
- Remove Window Air Conditioners in the Winter
- Insulate Your Exterior Switches and Outlets
- Install A Ceiling Fan
- Install Faucet Aerators
- Fix Leaky Faucets
- Install Hot Water Pipe Insulation
- Set Your Hot Water Temperature to 49C or 120F
- Install Low-Flow Shower Heads
- Replace an Incandescent Light Bulb With a Compact Fluorescent

Figure 1: Sample Acts of Green from the Canadian campaign (Source: http://green.cbc.ca/ActsList.aspx)

The initial campaign was successful in engaging Canadians in pro-environmental behaviour. As a result, Cisco has rolled out the project internationally and in the United States with a strictly viral, online platform. The hope is to generate similar successes without the influence of a traditional media partner (Black 2009b). However, this might prove to be challenging. Willa Black (2009a) of Cisco attributes the success of the Canadian campaign in large part to the popularity of *The Hour* host, George Stroumboloupoulos, who attracted a diverse list of campaign endorsers. Guests to the show included music celebrities, well-known environmental advocates, industry representatives, and federal politicians. Celebrity as strategy certainly boosted the reputation of the campaign. Brockington (2008) and Lester (2006) argue that celebrities offer symbolic encouragement to different demographics and non-environmentalists. People identify and value both experts and non-experts. For instance, O'Neill and Hulme (2009) note that non-expert "climate icons" are often well quipped to engage non-expert citizens about environmental issues and overcome barriers to participation. From an audience standpoint, having a combination of environmental experts and non-experts provided potential for OMAOG reach a diversified audience.

HOW IT WORKS: THE NEXUS OF SOCIAL NETWORKING AND GOING GREEN

OMAOG encourages consumers to become socially conscious and environmentally aware by positioning consumption in terms of environmental responsibility, and making campaign participation a

network oriented activity. This approach reflects a shift in environmental communication from one way information delivery to more engaging dialogical forms of communicating (Harriss 2007;Regan 2007). Its online interface is user-friendly and action-oriented in design as it quickly guides interested participants through a basic sign up procedure to start their acts of green. Peter Corbyn (2009b) of GreenNexxus notes that in order to ensure a high participation rate, CBC, Cisco, and GreenNexxus agreed that the sign up process had to have a low barrier to entry. Participant names, e-mail addresses, province, and age range were, and still are, required. This location-specific information helped determine the carbon footprint of electrical consumption, as the grams of GHG emissions vary from region to region because their electricity generation grids differ. For example, the grams of GHG (per kWh) generated are quite high in provinces such as Alberta and Saskatchewan, for their primary sources of electricity generation are fossil fuel based. Conversely, GHG emissions from electricity consumption in provinces such as Manitoba and Québec are lower as most of their electricity is generated by hydro power.

A built-in GHG calculator tallies members' emissions reductions based on their particular act and transfers the data into a points system. Specific acts of green include: replacing incandescent light bulbs with compact fluorescents, installing a programmable thermostat, composting, and taking public transportation. Certain acts grant more points because they produce greater reduction in greenhouse gases than others.

The campaign does rely on members to be honest in reporting the green acts they commit. While there isn't a foolproof way to refrain members from exaggerating their green acts, the website does monitor IP address activity to catch accounts that look suspicious or improbable. Corbyn (2009a) noted that there were some cases where exaggeration was obvious and they had to adjust the numbers accordingly. Considering this, discretion should be taken when assessing the larger impact on GHG reduction. While it is speculative to suggest that members inflated their 'green acts', the OMAOG design shows some flaws in representing total accuracy. For example, in the spirit of 'green challenges' across university campuses, the sheer availability of multiple broadband locations could accommodate cheating.

Nonetheless, being presented with accurately calculated feedback is important because it allows members to measure their impact immediately and put it in perspective. Moser and Dilling (2007) argue that when it comes to negotiating one's impact feedback is essential: "Metrics of progress towards sustainability are needed that are meaningful to those who are making changes to provide periodic feedback and encouragement along the way and to serve as an evaluative yard stick" (Moser and Dilling 2007, p.511).

Members are encouraged to spread their progress via social networking outlets such as Facebook, share and discuss green tips, read blogs and post ideas to the interactive web forum. The blog feature illustrates themes of environmental design, retrofitting suggestions, green business ideas, and sustainable perspectives to be shared with other members. In addition, the web site architecture enables members to navigate the site effortlessly. OMAOG design clearly demonstrates the connection between everyday actions, energy consumption, and the resulting ecological impact at the click of a mouse (Mankoff J., et al 2007). It does not bombard users with an information campaign to change their behaviour radically, but rather provides a simplified social tool that provides ways to examine and alter existing behaviours.

Broadband connectivity is essential to the functioning of the OMAOG campaign. The Internet is the locus of activity, and broadband access facilitates the use of social networking tools that encourage

participation. While accessing the OMAOG site itself does not require a high capacity broadband network, the value of broadband is that it allows for seamless connection to OMAOG and to other social networking tools, like Facebook, that are part of these individual participants' everyday environments. In this instance, broadband is an enabler of a set of social actions and practices that result in improved environmental outcomes, in this case through the reduction of greenhouse gas emissions.

How it Measures Up

As noted, in the Canadian campaign participants committed to individual acts of green that would result in the elimination of one hundred thousand metric tonnes (t) of greenhouse gas emissions. On a large scale, these total GHG reductions are the equivalent of taking 43,000 cars off the road for a year, planting just over 200,000 trees, or replacing 8.4 Million regular light bulbs with CFL's (compact fluorescent light bulbs). The average Canadian household emits approximately 20 metric tonnes per year of GHG. To put this in perspective, the total savings identified during OMAOG in Canada is the equivalent of reducing the emissions of about 5,000 typical Canadian homes to zero (Corbyn 2009b). Corbyn (2009b) notes that although the OMAOG carbon calculator is *not* always 100% accurate, its developers are confident that the overall quantification of GHG emissions identified in the campaign are exact within a few percentage points.[iii] The OMAOG calculator was peer reviewed by environmental non-profit organizations, who believe the overall calculations to be accurate en masse.

On top of reducing environmental impact, the campaign also identified ways to reduce costs for individuals. For example, replacing one 60-Watt regular bulb with a 15 Watt CFL can save about $10 per year, or just under $1 per month. Replacing the majority of light bulbs in one's home (approximately 10) would afford savings of $100 to $120 per year. That said, some variance in accuracy occurs. For example, the calculator assumes that light bulbs are used on average 4 hours per day. Undoubtedly, certain homes fall below and above this range, however, the average total number will remain accurate as long as household energy usage stays proportionate.

Who got involved: mobilization of individuals and small groups

There is growing consensus in the literature that in order to make global environmental affairs relevant to multiple audiences, the issues must be made local and demonstrate collective benefits of carrying out environmentally responsible actions (Moser and Dilling 2007;Leiserowitz 2007; Michaelis 2007; Roser-Renouff & Nisbet 2008). Michaelis (2007) argues that environmental issues are difficult to cope with on an individual level because of the complexity of information. She states, "messages directed at individuals have little effect. The most effective strategies are those that engage people in groups, and give them opportunities for developing their understanding and their narratives about consumption in dialogue together" (Michaelis 2007, 254). OMAOG encouraged communities, schools and businesses to participate in reducing their collective environmental impact by setting targets and initiating friendly competition. There were over eighty participating communities (schools, universities, youth organizations, environmental organizations, cities, towns) and thirteen businesses that actively promoted the campaign through their employee and customer outreach programs (Black 2009b). Figure 2 shows the age range of all participants. For example, the Bank of Montreal (BMO – one of Canada's five major banks) was an early adopter of the program in the workplace, encouraging staff to challenge one another in friendly competitions of building green acts. Studies in environment and behaviour suggest that a level of competition between groups has been shown to improve social identities. People who identify with a particular social group become concerned with their "in-group" reputation (Hardy

& Van Vugt 2006; Milinski et., al 2006; Van Vugt 2009). Many participating businesses and schools attributed an increase in morale during involvement with the campaign (Black 2009b).

Age	Total Percentage of Participants that registered green acts
Under 13	2%
13-17	12%
18-21	18%
22-29	22%
30-39	16%
40-49	19%
50-59	8%
60-69	2%
70-79	1%
80 +	0

Figure 2: Demographics of Canadian campaign (Source: Corbyn 2009b)

DISCUSSION

From the outset, Cisco's primary strategy for OMAOG was to use social media tools to harness the power of personal connections (Black 2009b). Social media tools—personal media forms such as mircroblogs, video sharing, instant messaging, and social networking sites— harness these connections, and are becoming widely used.[iv] On the web, "personalization" was ranked as one of the top five trends of 2009 by Read Write Web, one of the world's top 20 blogs and first choice for news on cutting-edge web products and trends according to Technorati. [v] Furthermore, customizing preferences and aggregating information are becoming more prevalent as users tend to be network oriented and collaboratively focused (Luders 2008; Miller 2008; Spinuzzi 2009).

Hasbrouck and Woodruff (2008) suggest these directions provide opportunities for participatory environmentalism in which social media tools serve as individual platforms where people can personalize environmentalism. These occurrences are evidenced in the stories of OMAOG. For some, personal connections materialized into small and large groups who challenged one another to see whether one group could 'out-green' the other. For example, neighbouring towns of Airdrie and Okotoks in the province of Alberta entered into a three month competition initiated by the mayors of each town. Linda Bruce, mayor of Airdrie, utilized her online social networks to disseminate the challenge: "I blitzed everybody, I spammed people. It was terrible, shameless really" (Globe and Mail 2009). Participating communities and businesses demonstrated the online social networking capacity of the campaign. All "challenges" had to officially registered online to be considered warranted.

Of interest for this research is developing an understanding of what value and incentive there is for members to engage in green practices. Moser and Dilling (2007) observe that simply acknowledging environmental issues are of importance does not make them a national priority. Instead, people should be afforded the opportunity to solve the problem. OMAOG green tips are presented as solutions to everyday environmental concerns (energy, sustainable activity, and consumption) in the household. The design of these solutions makes it simple for individuals to integrate green practices into their daily lifestyle. Chess et., al (2007) note that providing information that contains personal efficacy is more likely to translate into sizable remedial action. Working with existing cultural models and concepts

(e.g., rebates for renewable energy, high gas prices) that are already familiar will further accelerate a campaign because its aim focuses on altering, not creating unfamiliar actions.

While the OMAOG website contains an information component about relevant topics, users are not overwhelmed during the process of registering a green act. That is, these information features do not interfere with this practice. In the broader context of environmental discourse, this simplified strategy takes a non-expert approach to communicating the issues, by offering up an accessible green-oriented interface for average persons. This is important because environmental communication models are needed that don't complicate and inflate the issues. In saturated information markets audiences are selective of environmental authority because of repeated patterns (talking heads) and negative outlooks (irreparable doomsday events, perpetuating fear). To combat this, communication campaigns with an environmental focus must provide a reason (e.g, incentive) to get attention and sustain engagement (Moser and Dilling 2007). Given these circumstances, we argue below that the value of "crowdsourcing" as a theoretical framework, where social and cultural capital are key incentives, is applicable to understanding what makes people gravitate towards environmentally focused initiatives. The discussion above suggests that people are motivated to compete in social and environmental causes that offer value (e.g, efficacy, incentive) and social media tools can encourage these interests by offering personalized feedback through networks. Further notable discussion points include:

    i.   People understand and engage with environmental issues when they are made local and presented in the form of a problem to which they can offer solutions
    ii.   The OMAOG web design incorporated features similar to other personal media forms, and was as functional as other social network sites highly frequented by users

Crowdsourcing- A chance for environmentalism?

The term crowdsourcing describes a web-based model used by companies to outsource particular projects to networks of individuals. Crowdsourcing seeks the creative solutions of individuals and groups as described in particular open calls for proposals. In other words, a company posts a problem online, individuals or groups offer up solutions, and the winning projects are awarded a bounty. This can be in monetary form, but can also include skills recognition, reputation enhancement, and social and cultural capital (Brabham 2008a;Howe 2008; Surowiecki 2004). Furthermore, crowdsourcing provides leverage for creative workers to showcase their work to multiple networks. Solutions can be peer-oriented or done individually.

Although typically used in the for-profit context, the crowdsourcing model is not limited to specific circumstances. Brabham (2008b) suggests that more research is needed on the ways in which crowdsourcing can include social and environmental justice initiatives. Conceptualizing crowdsourcing as not just a profit-generating business model, but rather a problem solving model with a democratic platform would increase functionality for different causes: how can the problem solving model of crowdsourcing have influence in the way we solve the world's most crucial social and environmental problems?

On the surface, OMAOG doesn't appear to be a crowdsourcing experiment as it mainly provides creative solutions (green acts) as opposed to requesting them[vi] from its networks. However, many members developed challenges with other networks that shared green solutions (e.g, tips or suggestions for installing environmental products), required team-work, and problem solving. In this light, OMAOG can be seen as a crowdsourcing promoter that grants its members the option to participate

depending on their level of interest. Put simply, one does not have to be a world class strategist, web designer, or expert to enter into a group or challenge. OMAOG is not seeking a substitute for creative labours and experts that might already exist, but rather is putting the call out to average citizens of all backgrounds to pledge green solutions that work towards reducing unsustainable actions and behaviours. All members, regardless of how many green acts they commit, make up a crowd committed to reducing environmental impact. The "bounty" in this case is not economic, but rather comes in the form of social and environmental gains via the green points system. Because the interface is personalized, individual progress is easily traceable. Those members (schools, towns, communities) who seek to participate in a "challenge" rely on the networking capability of the group, or "crowd" to band together to reach their desired environmental goals. There is social value in working together and solving problems concerning the environment (Adger 2003).

The shared resources that filter through networks to help achieve these goals are often facilitated by social networking sites (SNS, e.g. Facebook). The value derived from crowdsourcing is comparable to that derived from social networking.On most SNS individuals tend to associate with others who have similar values, lifestyles, and tastes. In networks of like-minded members, people build social capital (Boyd and Ellison 2007). Crowdsourcing is still a nascent research area that provides an applicable framework for understanding the different types of value individuals and groups extrapolate from participating in web-based initiatives that rely heavily on commitment. Examples of environmental crowdsourcing in practice are beginning to emerge[vii], demonstrating that online environmental networks are gaining momentum.

Collaborative Networks

Although we don't know how much revenue was earned from the initial OMAOG project, we do know that on the surface Cisco's primary interest wasn't profit, but rather brand engagement with an environmental purpose (Black 2009b). Cisco has established a reputation as an environmental leader, for instance through its support of the Connected Urban Development initiative (Cisco, 2009). The company wasn't selling a product, but rather an environmental lifestyle to those who were interested. On the whole, there wasn't a considerable amount of pushback from the public, and considering two in every thousand Canadians got in on the act it portrays a positive example of new media (GreenNexxus, CBC online) and big business working together.

Having a successful environmental reputation and maintaining ethical integrity is challenging as the public is growing wearier of corporate environmental practices. The environmental movement has generated the phenomenon of 'going green' at both the level of the consumer and producer. 'Going green' is a practice that promotes an ethical shift in behaviour by focusing consumer choice and corporate strategy on environmental sustainability. The products and services that perpetuate the "going green" mentality are largely shaped by processes of green capitalism. Corporations strongly implement this by adopting the language of sustainable development and environmental sustainability in their slogans (Baer and Singer 2009). With this, corporations prescribe environmental values and imagery to products and services at all levels of business through green-marketing. This has opened the doors to green consumerism, the belief that purchasing environmentally sensitive—or friendly— products contributes to reducing the environmental degradation of the planet (Cox 2006;Baer and Singer 2009). It has also sparked skepticism by critics, scholars, and the general public because many corporations are guilty of "greenwashing." This is a finely crafted communications strategy of distorted information used by an organization or company so as to present an environmentally, socially, and culturally responsible public image. Conversely, they are covering up unstainable and environmentally destructive habits (Corbett 2006; Cox 2006; Munshi and Kurian 2005).

OMAOG business partners appear to have nothing to hide, and as far as image is concerned there aren't substantial red flags to be raised. This could be attributed to their emphasis on energy and GHG reduction, not pure consumption. Although OMAOG encourages members to purchase ecologically sensitive products, most green acts emphasize behaviours and practices that require an alteration of existing behaviour patterns—i.e, carpooling, turning off the lights, and line drying clothes. Taking a not-in-your-face approach is effective in the context of environmental behaviour and social marketing. As mentioned above, producing a campaign aimed at altering as opposed to changing people's behaviour has a better chance at being successful (Mckenzie-Mohr 2000;Moser and Dilling 2007).

In summary, the data provided here shows a case study of actions being taken to support sustainability using broadband. OMAOG set out to show Canadians that being an environmentally responsible citizen is not a challenging task. With a drive-to-web strategy, the campaign was effective at reaching individuals (65,000 Canadians participated) through already familiar networks (e.g., Facebook). It visualized personal results through an emissions tracker (GHG calculator), through which members could track their impact. OMAOG was successful at getting individuals to engage in pro-environmental behaviours, make sustainable choices, connect with groups, and share resources across green networks.

That being said, there are some limitations worth noting. Although the campaign claimed to reduce over one hundred thousand metric tonnes (t) in emissions, we don't have a comprehensive indicator as to how accurate these numbers are. That is, there is no finite way of knowing how many green acts were exaggerated and how many were actually committed. Second, although the website provides educational resources about climate change and environmental issues, members are not required to inform themselves before committing 'acts of green.' While a low barrier to entry is effective for pulling people in, committing 'acts of green' doesn't necessarily make one more knowledgeable about these acts (i.e., make connections between individual action, and social, political and environmental significance). Further, it raises concerns over where the personal efficacy lies for individuals when the campaign is over. If people used the site to merely register and pledge green acts, where is the staying power in keeping them there long-term? While the campaign boosted apparent success in the near-term from a business perspective (reaching its 'acts of green' target), the likelihood of maintaining long term emissions reduction through engaging in green acts online is questionable. For example, the towns of Airdrie and Okotoks, which competed against one another, vow that they will keep up the challenge and make it into an annual green competition, yet evidence of this is still to come (Globe and Mail 2009). This, and other individual examples, will provide actual indicators as to whether OMAOG was successful at getting people to adopt sustainable behaviours over time. Third, OMAOG was successful at engaging youth (see figure 2), but this is not surprising as young people have the highest Internet access rates (Statistics Canada, 2008). Determining ways to encourage older demographics is an identifiable example the campaign needs to consider in the future.

Conclusion and Next Steps

As mentioned, OMAOG no longer has a traditional middle media partner to promote its message of protecting the environment. It relies on digital media technology (online social media tools) to reach its networks. While approximately 8,000 members on the original Canadian campaign joined the Facebook group[viii], adoption rates by users on the US Facebook site are lower at approximately 815 members[ix]. Since the initial campaign shifted to the United States in July 2009, members have registered approximately 130,000 acts[x]. Although it is considered a global campaign, the primary focus is currently in the United States (Black 2009a). The global figure of green acts is a combination of the

total Canadian acts added to the ongoing US acts. Figure 3 shows the current site. Whether or not a strictly web-based campaign can be sustainable without promotional leverage from older media such as television is currently unknown and is the most pressing challenge going forward.
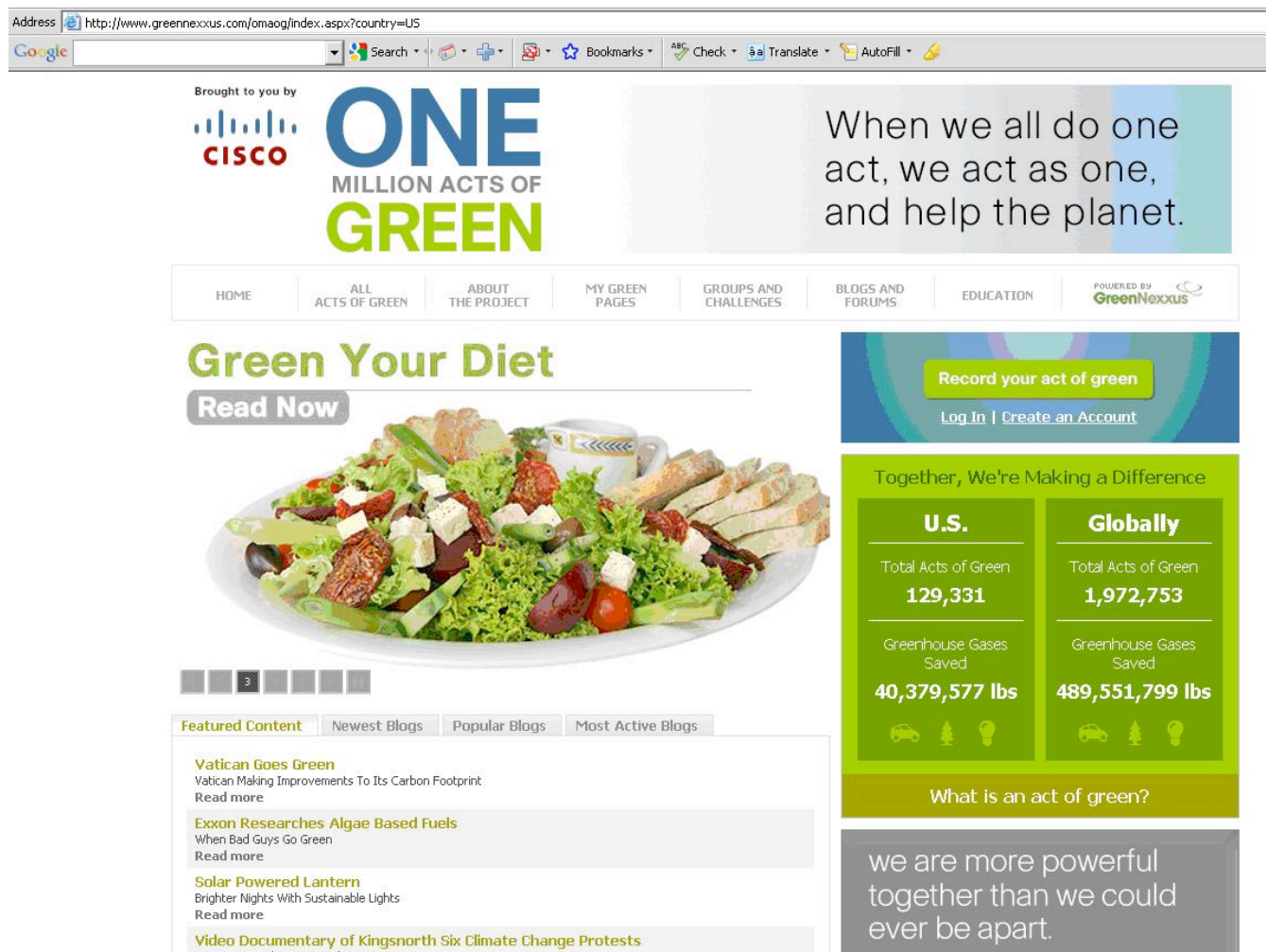

Figure 3: Current OMAOG site representing US and Global numbers: Source: (http://www.greennexxus.com/omaog/index.aspx)

It is clear that some 'acts of green' are less onerous than others due to their low-risk involvement. Therefore, improving methods to engage people in more challenging acts should be considered. As mentioned above, acts such as 'telecommuting' will become more accessible for average households as the speeds of broadband networks increase to support its bandwidth demand.

Further, implementation of this emissions reduction strategy addresses an underserved need. According to a recent UK study, 62% of British workers are inclined to adopt remote work options, including technology-assisted services. The British workforce spends approximately 26 million hours per week commuting, whereby 4.6 million of those hours are reported to be "wasted" on commuting to and from work (Citrix 2009). Telecommuting provides not just environmental benefits, but also promotes a healthy work/life balance, as people have more time to exercise and prepare healthy meal alternatives. To address this need, Cisco is committed to developing technology solutions that mitigate emissions from air and car travel. Their championing of "TelePresence" allows for businesses and organisations to collaborate via an online network with high quality video and audio. Cisco has established multiple

public TelePresence locations internationally (Cisco 2009b). Rewarding active businesses that participate in OMAOG with TelePresence technology would be an effective incentive to garner support and encourage companies to adopt more sustainable measures.

Considering most social network members gravitate towards their own interests and what their friends are doing, attracting new members is challenging (Boyd and Ellison 2007). The original OMAOG Facebook group site holds an impressive member base, yet user activity is generally low, and most discussion forums remain inactive. One way of explaining this inactivity is by the sheer volume of information and web traffic. Because the transactional costs to information sharing have dropped so low, there has been an explosion of innovation in the social media and social networking sector (Spinuzzi 2009). Forecasting whether such innovation will sustain demand in the online media market—that is, will users of SNS feel gratified from this service over time, is unclear. Additional challenges Wittel (2001) and Miller (2008) argue in maintaining network activity is that we find ourselves in a constant state of "catching-up networking" with our multiple networks and contacts. As the contacts expand within these networks, the use of both fixed (computer) and mobile access (PDAs and smart phones) locations are in demand in order to maintain active connections.

In thinking about the staying power of sites such as OMAOG, continued activity by its users is a must for it to be a priority network. The initial campaign ended in Canada in mid-2009. Canadians had until the end of September to transfer their accounts to the global site if they wished to continue committing and pledging 'acts of green.' If they failed to do this, their accounts would be terminated. Approximately 15% (or just under 10,000) of Canadian members transferred their accounts to the current site (Corbyn 2009b). This number isn't particularly high, yet it shows some indication that there is still moderate interest in maintaining green networks and continuing sustainable behaviours in the future.

Can Broadband support environmental participation alone?

Broadband and other digital media technologies enable opportunities for individuals. The potential to be involved in these activities is high, but its chances of sustaining a critical mass of networks are uncertain. While the Internet may facilitate causes that are environmentally minded, there are still unknowns as to what the long-term implications are for the social web (Boyd and Ellison 2007). As well, an increasing self-reliance on the web is changing the way we position and prioritise media. Lester and Hutchins (2009) see opportunity at these crossroads:

> "The continuing diffusion and growth of the internet and digital media means that 'new media' are actually everyday media (at least in developed economies), and it is in these mechanisms and networked media practices that the real potential of online communication resides for environmental politics into the future" (Lester and Hutchins 2009, 591).

OMAOG demonstrated that traditional media and new media have the mobilizing capacity to raise environmental consciousness on a mass level, yet whether these efforts keep traction online without the backing of outlets such as television will determine the longer-term success of the campaign in the United States and around the Globe. It is apparent that the influence of the CBC television show *The Hour* enhanced the reputation (popular host, George Stroumboloupoulos, celebrity endorsement), reached national audiences, and generated participation success.

This paper discussed opportunities network environmentalism can provide for individuals and groups using broadband connectivity as the networking platform. It suggested that the collective power of crowds to produce green-oriented solutions shows that people value participating in peer competitions for incentives of social and cultural capital. Combining this potential to environmentally focused projects can bring promising results (Brabham 2008b). Further, it demonstrated that the knowledge of motivations and perceived barriers to participating must be considered for an environmental campaign to attain measurable success. Broadband supported environmental campaigns are effective at facilitating and simplifying barriers to entry, and provide opportunities for individuals to integrate environmentally sustainable behaviours into their lifestyle. This was evidenced in a case study of actions being taken by ordinary individuals across households in Canada to reduce GHG emissions. More research is needed that addresses the challenge of maintaining connectivity in this context. For example, comparing the strength of existing community ties offline with online social ties would help position the importance of new media technologies to the success of collective environmental efforts and action. For the purposes of improving models such as OMAOG, a pilot study that focuses on specific communities that utilized OMAOG would create interesting feedback loops between communities, research, and industry as to what approaches fail and which ones succeed. Specifically, a participant study as to why members, particularly those groups who engaged in "challenges", devoted their creative energy to sustainable actions would inform whether these interests are committed over time. Why, for example, did the primary competition success story occur in a rural setting, and how central was broadband technology to the proliferation of this success? These areas of inquiry will be become crucial as the ubiquity of broadband supported networks increases and the push to stabilize global warming levels is considered greatly by individuals in their cities, towns, communities (both offline and online) across the globe.

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Notes

[i] Case study data collected included the following: (1) phone and e-mail interviews with Peter Corbyn of GreenNexxus and Willa Black of Cisco, (2) field notes from the Information Technology Association of Canada's Digital Business Forum on Cisco's One Million Acts of Green, and (3) presentation slides from Willa Black's talk at the Digital Business Forum.

[ii] 1000 kilograms equals 1 metric tonne (t) or 1 kilogram equals 0.001 tons.

[iii] Peter Corbyn is a P.Eng and Co-Founder of GreenNexxus

[iv] As of October 2009, it is estimated that close to 50% of American Internet users are engaging with social networks, with approximately 20% of these using status updating tools like Twitter (Pew Internet Project, 2009)

[v] http://technorati.com/blogs/top100

[vi] It should be noted that members are given the option to suggest "green acts", however, most of the acts are largely determined ahead of time due to the complexity of making particular acts match up with GHG formulas. Although a proposed act might be a considered a sustainable activity, it might not fit into GreenNexxus' GHG calculator.

[vii] http://www.cleantechopen.com/app.cgi/content/home/index
http://www.zerofootprint.net/communities/building-re-skinning-competition/

[viii] http://www.facebook.com/group.php?gid=86277625499&v=wall&ref=search

[ix] http://www.facebook.com/group.php?gid=51230871229

[x] http://www.greennexxus.com/omaog/index.aspx