MRP

A Sustainable Facilities Service Business in Partnership with ALUS Canada

By CHRISTIAN COLDEA

To - ANDERS SANDBERG, MARK WINFEILD

Abstract

Greenhouse Gas reduction targets congruent within Paris Accord commitments require expensive and politically unacceptable overt carbon pricing by Canadian federal and provincial governments. Small-Medium Enterprises (SME) can contribute to climate targets by using their agile size to adopt sustainable practices and set chain effects into motion. ***ecobc*** is a small business in the Toronto facilities maintenance industry that provides high rise window cleaning services to condo corporations while funneling profits towards an Environmental Non-Government Organization (NGO) called ALUS Canada. SME-NGO Partnerships are vital towards moving the needle on climate change due to their organizational size and ability to pivot in adapting to new circumstances. ***ecobc's*** SME-NGO partnership with ALUS Canada supports Canadian Nationally Determined Contribution toward the Paris Accord by creating a net positive impact on ecosystem-services, reducing emissions, and by setting an example for sustainability leadership within the Toronto facilities maintenance industry.

Introduction

Climate change is the most complex societal challenge of the 21st century. The world's leading climate scientists have warned that only a dozen years remain to keep global warming under 1.5°C, beyond which, even half a degree will significantly worsen the risks of drought, floods, extreme heat, and poverty for hundreds of millions of people (Watts, 2018). Alarmingly, 2014 to 2019 have been the warmest five years since global record began, and as of 2019 the atmospheric carbon dioxide concentration is the highest ever recorded in human history (Dennis et al., 2020). Society is significantly impacted by climate change, which poses risks to urban areas from heat waves and other extreme events (e.g., flooding, droughts, etc.), changes in patterns of infectious diseases, and the impacts on food yields and freshwater supplies (McMichael et al., 2008).

The Canadian Federal government has changed its stance on sustainability several times, flip-flopping its way into sustainability laggardship. Businesses and individuals have followed suit leading Canada to become the fourth largest emitter among OECD nations (OECD, 2017). Given the global climate crisis, raising our national sustainability profile is an urgent task. If climate change mitigation is going to happen, the responsibility needs to be shared by all sectors. Government leadership is vital toward creating the top down policies necessary to reach ambitious international goals. However, the government is limited in its ability to increase its policy stringency of carbon pricing before it runs the risk of losing the next election. Overly aggressive policies are unpopular with voters who can block the retention of government power. Similarly big businesses can only spend so much before they are curtailed by investors.

Grassroots efforts can support the federal government in mitigating the political risks of achieving sustainability goals through extreme carbon pricing. Individuals, small businesses, and social organizations can support international efforts at the grassroots level by virtue of their small size and ability to act quickly. Small and Medium Sized Enterprises (SMEs) are uniquely positioned to support national policy efforts from the bottom up due to their organizational agility. In 2013, OECD Small and Medium sized Enterprises represented 97% percent of all enterprises and 60% of total employment (Shashwat Koirala, 2018). Reducing the environmental impact of manufacturing and service SMEs is a key success factor in creating sustainable economies (OECD, 2015). Due to their large share of national economies, SMEs have a significant opportunity to influence the progress toward national sustainability commitments.

Green SMEs provide many benefits to emission reduction efforts, but they also stand to benefit from them as well. Adopting sustainability measures can help SMEs with employee retention, market recognition/preference, increased operational efficiency, futureproofing, and viability in earning lucrative government contracts. Second-order effects of SME sustainability are the spread of environmental consciousness to employees and within communities. Further, by reducing operational emissions they contribute directly toward national emissions reduction goals. Sustainability is a win-win for governments and SMEs alike, which makes sustainability adoption by SMEs very useful toward achieving national goals.

I am personally compelled towards making a contribution at the grassroots level by creating a sustainable organization that will set a strong example for other SMEs. During my time in the Master's of Environmental Studies program I focused on Climate Policy and Ecological Economics within the Canadian context. While analyzing Federal climate change policies, and studying ecosystem service valuation it has become clear to me that my personal skill set is best suited toward building a business that supports sustainability from the bottom up. Combining two years of study with my pre-existing entrepreneurial drive, I have founded ***ecobc*** (an SME in the facilities maintenance industry) to set an example in sustainable business that other SMEs can follow.

ecobc is a Toronto business in the facilities services industry that provides high-rise window cleaning services to condominium corporations. The goal of ***ecobc*** is to become a profitable local business that creates engaging careers, is awarded for exceptional management, and leads the facilities service industry in sustainability. To achieve its sustainability goals, ***ecobc*** has partnered with ***ALUS Canada***[1] (an environmental non-government organization) to support their efforts in building natural capital and diverse ecosystem services. ***ecobc*** and its partner realize a mutual benefit when the company donates a portion of revenue to the NGO. ***ALUS Canada*** receives exposure, and funding to support the delivery of ecosystem services, while ***ecobc*** receives a strategic partner who provides sustainability guidance and legitimacy.

Non-Government Organizations (NGOs) are key actors in the transition to sustainable development. The 1992 Earth Summit and Agenda 21 action plan both recognize the role of civil and business sectors in the implementation of sustainable development. NGOs represent civil society and have a large influence on international negotiations, government policy, and business decision making. Often, NGOs and businesses end up at odds, as one supports civil interests and the other business profitability. In other circumstances, NGOs that form collaborations with business enterprises can influence the businesses. As stakeholders, NGOs have an improved ability to steer business toward mutually beneficial outcomes, especially in small and medium-sized enterprises who, "rank the importance of different stakeholders similarly to larger

[1] ALUS Canada's mission is to enable Canadians to provide direct support to a national network of farmers and ranchers delivering ecosystem services in their communities, including clean air, clean water, carbon sequestration, erosion control, flood mitigation, pollinator support and wildlife habitat.

businesses and often engage in cooperation with non-governmental organizations" (Harangozó & Zilahy, 2015). SME-NGO partnerships offer guidance for SMEs and can even provide a source of funding for smaller NGOs in some circumstances. For example, *1% for the planet,* by Patagonia founder Yvon Chouinard, is a global organization that distributes profits from businesses toward environmental causes.

I have chosen to follow this model in my own SME-NGO collaboration. ***ecobc*** has elected to donate 1% of revenue to ALUS Canada into perpetuity, as it grows within Toronto - one of the fastest growing economies in North America. Within the facility services industry, ***ecobc*** will diversify its service offering to address the many changes to Canadian buildings in order to reduce environmental impact. The future likely holds large scale retrofits of older buildings, where sustainability will become a necessary consideration. With the right organizational targets and stakeholders, ***ecobc*** will make larger sustainability contributions as the business matures.

Climate Science as a Motivator.

Why start a sustainable business? Afterall, donating proceeds, using sustainable accounting practices, and reducing operational footprint are all added strains to the work of starting a successful business. New businesses are usually so overwhelmed with growing sales and operations that sustainability is usually an afterthought. When I ask myself this question, the answer is clear: climate change. Climate science is unwavering in its proof of anthropogenic climate change. We now live in the warmest period in the history of modern civilization. The world is approximately 1ºC warmer than pre-industrial levels due to human activities (IPCC, 2018). Atmospheric carbon dioxide (CO_2) concentrations have reached levels that have been unparalleled for three million years, when sea levels and temperatures were far higher

(USGCRP, 2017). 78% of CO_2 emissions come from combustion and industrial processes between 1970 to 2010, during which period cumulative CO_2 emissions more than tripled (Blanco et al., 2014).

> "Following devastating hurricanes in the US, record droughts in Cape Town and forest fires in the Arctic, the IPCC makes clear that climate change is already happening, upgraded its risk warning from previous reports, and warned that every fraction of additional warming would worsen the impact" (Watts, 2018).

As economic growth becomes less carbon intensive, atmospheric CO_2 concentration will come down from the current 400 parts per million. However, limiting catastrophic climate change above 2ºC requires massive shifts in human behavior.

In business, profitability is vital. However it is also important to recognize that individuals, organizations and businesses exist within global ecosystems. Economic orders, political expressions, and social organizations change to fit the demands of their respective place in history. Reductions in the energy intensity of economic output during the past four decades have not been sufficient to offset the effect of GDP growth (Blanco et al., 2014). Businesses in the modern economy emerge at the forefront of the battle over climate change. The underlying philosophies of modern businesses influence business operations, which in-turn influence ecosystems and society. Anthropogenic drivers such as economic and population growth are extremely likely to be the dominant cause of observed climate changes since the mid-20th Century (Pachauri et al., 2014). Continuing down the path of unrestrained growth is unsustainable and will result in an uncertain future.

The future is uncertain, but current human influence on the climate system is clear - anthropogenic emissions of Greenhouse Gasses (GHGs) have reached unprecedented levels. The scientific community shows that most scientists (90-100% depending on the exact question, timing, and sampling methodology) agree on anthropogenic global warming (Cook et al., 2016). Despite the existing consensus and visible signals of changing climate, misinformation continues to spread. Manufactured doubt around the scientific consensus is the most effective means of reducing acceptance for climate change and policies for mitigation (Ibid). Climate change denial somehow persists in the face of satellite imaging that clearly shows signals of climate change to the naked eye, including receding polar ice caps, rising sea level, and ocean acidification (NASA, n.d.).[2]

Per capita production and consumption growth is a major driver for worldwide increasing GHG emissions (Blanco et al., 2014). The observed impacts on the climate system are obvious and are extremely likely to have been caused by unprecedented atmospheric concentrations of carbon dioxide, methane, and nitrous oxide that are byproducts of anthropogenic activity (Pachauri et al., 2014). While vested interests stand to profit from the delay in aggressive policies toward climate mitigation and GHG eradication, continued emissions could have disastrous and irreversible effects. To limit the future impacts of climate change requires, "sustained and substantial reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks" (Ibid). The scientific community, apart from select outliers and contrarians, conclude that human activity needs to adapt to avoid severe consequences to human societies and natural systems.

[2] (https://climate.nasa.gov/evidence/)

Avoiding catastrophic future climate events is a shared responsibility. Mitigation and adaptation to avoid severe, widespread, and irreversible impacts on the climate must come from a united effort by individuals, civil society, business, and governments. From a small business standpoint, the risks of mitigation include lower profits, more time spent on accountability, and upfront costs to use energy efficient practices. However, the risks, “do not involve the same possibility of severe, widespread and irreversible impacts as risks from climate change, increasing the benefits from near-term mitigation efforts” (Pachauri et al., 2014). Implementing the severe reductions necessary to reach near zero emissions by the end of the century is a huge undertaking requiring solutions to technological, economic, social, and institutional challenges. Moreover, the urgency of meeting those challenges is exacerbated by the speed at which climate change occurs (Ibid). Implementation depends on policies and cooperation at all social levels and is strengthened by integrating responses to, “link adaptation and mitigation with other societal objectives” (Ibid). Enabling factors for adaptation and mitigation include, “effective institutions and governance, innovation and investments in environmentally sound technologies and infrastructure, sustainable livelihoods and behavioral and lifestyle choices” (Ibid).

International Effort & Canadian Nationally Determined Contribution

Climate change is a notoriously difficult problem to solve. As a global issue, it requires the cooperation of hundreds of national and sub-national governments. Such large scale cooperation necessitates wholesale agreement by decision makers in each government to act on climate change and set climate change as a common priority. Problems with spurring action from such varied governments are competing interests, lack of (international) policing, and varied solutions based on the needs and preference of each government. Moreover, due to lack of consequence, government participation is almost entirely based on voluntary contributions - repercussions for non-participation are mostly damaging to national reputations, a weak motivator for substantive action.

The international reaction to Climate Change has been an attempt to legally bind developed nations to achieve targets for lowered greenhouse gas emissions. The IPCC (International Panel on Climate Change) was created in 1988 to report on climate change science and guide the work of the United Nations Framework Convention on Climate Change (UNFCCC). The objective of the UNFCCC is to, "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (human-induced) interference with the climate system" (UNFCC, 2014). Annual UNFCC meetings known as “Conferences of the Parties” (COP), have produced a series of legally binding obligations for developed countries to reduce greenhouse gas emissions. However, although the obligations are legally binding in theory, practical enforcement of international law is non-existent.

The 2015 Paris Accord is an international treaty that aims at achieving a warming limit below 1.5 -2 degrees above pre-industrial levels. The accord strives to govern GHG reductions by inviting parties to offer Nationally Determined Contributions (NDCs). NDCs are voluntary goals set by each government (also known as Parties to the Conference) which will dictate domestic policies that will ideally achieve national commitments. Parties agreed to a long-term goal for adaptation that will foster climate resilience and low GHG development, in a manner that does not threaten food production. The Paris Accord, which passed the threshold to come into force on 5 October 2016, was ratified by 189 of 197 Parties to the Convention. Still, each country must communicate post 2020 goals to help reach the global emissions peak as soon as possible. Efforts to peak GHG emissions are done in the context of sustainable development, and eradication of poverty, with an understanding that developing countries will have more difficulty achieving their peak emissions.

For its own NDC, Canada has set the target to reduce emissions to 30% below 2005 levels by 2030 (Government of Canada, 2015). To maintain these goals, Canada has created the Pan Canadian Framework for Clean Growth and Climate Change (PCF) to meet emissions reduction targets, grow the economy, and build resilience to a changing climate. The PCF was adopted on December 9th, 2016 in response to Canadian ratification of The Paris Agreement, and proposed NDCs. The Pan-Canadian Framework rests on four pillars (1) pricing carbon pollution, (2) complementary measures to further reduce emissions across the economy, (3) measures to adapt to the impacts of climate change and build resilience, (4) actions to accelerate innovation, support clean technology, and create jobs (Government of Canada & Environment and Climate Change Canada, 2016). This sweeping top-down policy requires collaboration between federal, provincial, and territorial jurisdictions to implement action plans and policies that are tailored to the situation of each province.

Pricing carbon pollution is recognized broadly as one of the most, "effective, transparent, and efficient policy approaches" (Government of Canada & Environment and Climate Change Canada, 2016), and has already been implemented by provincial governments in British Columbia, Alberta, Quebec and Ontario. The scope of the PCF is to create a united policy with increasing stringency overtime, to share the burden across all jurisdictions equitably. Effective collaboration under the PCF are based on principles for collaboration that include; recognition of Canada's diverse sub-national economies, the need for an integrated economy-wide approach, recognition for the importance of a collaborative approach, recognizing early provincial leadership, acknowledging the federal government's commitment to allowing flexible provincial policies, commitment of federal government to complement and support provincial actions without duplicating them, strengthening indigenous relationships, recognizing Traditional Knowledge, and implementing a collaborative, science-based approach to inform future targets (Ibid).

As one of the most energy and emissions-intensive economies in the OECD, Canada needs to accelerate the transition to a green, low-carbon economy (OECD Environmental Performance Reviews, 2017). Canada is resource-rich and export-oriented, making the economy's dependence on trade in primary goods, especially oil, a visible culprit of poor environmental performance. Canadian buildings are also a large part poor emissions performance. Existing buildings are quickly aging, and new construction is highly emissions intensive. According to the Canadian Senate, "Canada's built environment – the collective of Canadians' residences, commercial buildings, and institutional buildings – is responsible for approximately 12% of the nation's total greenhouse gas emissions" (Deborah Schulte, 2018). Further, as density and population growth intensify in Canadian cities the problem only worsens. Considering rapid growth in the Canadian real estate market, developers are scrambling to keep up with demand in urban centers. Construction accounts for nearly seven percent of GDP (Government of Canada, 2019), and the construction of vertical spaces to accommodate density in cities is an emissions intensive process. Coupled with the existing emissions of aging buildings, the Canadian environmental performance is not set to improve any time soon.

The Federal carbon pricing policy in Canada imposes that provincial and territorial governments adopt an increasing price for carbon emissions in their jurisdictions. However, it has been a historically difficult process to arrive at federal leadership on the matter. The, “constitutional division of power, federal-provincial tensions over energy resources, longstanding regional sensitivities, the influence of local resource industries over provincial governments, and nationalist feelings in Quebec”, have made it almost impossible for serious federal leadership on the issue of carbon pricing in the past. Furthermore, the federal government has an unfortunate history of making policy announcements without subsequent policy implementation.

The period between 1990-2006 was characterised by an effort to instill sustainable development values and insight into the Government of Canada with little success, as both politics and public service remained averse to real progress. The strides made by the federal Liberals under the Chretien government to ratify the Kyoto protocol in 2002 were upheld by the minority Liberals under Paul Martin 2004. However, this period was followed by a Conservative government that pulled back on many aspects of sustainable development during the Harper era between 2006 and 2015. To demonstrate the zeitgeist, in the 2009 federal election, Stephan Harper touted that carbon taxes would ruin the economy, and that the same emissions reductions could be achieved solely based on regulations. The substantial government pullbacks under the Harper government are visible in the national environmental performance. Canada has retained the lowest contribution to sustainability among OECD nations for years. After the 2015 Paris Accord, the Canadian federal Liberal government has vowed to make significant improvements, and has already implemented a price on carbon. Although the Canadian carbon price is not high enough to achieve the Paris Accord nationally determined contribution, at least it may be acceptable enough to not become eradicated by future conservative leadership.

MES Reflection

During my studies in the Masters of Environmental Studies Program at York University, my studies focused on environmental policy, and environmental/ecological economics. The way I think about climate change is significantly different after finishing the program. When I began the program I was still dubious about the certainty of which climate change is anthropocentric, and the degree to which policy could mitigate the changing climate. I was curious about cosmic radiation, aerosols and other factors that I thought could be at play. However, through my learning objectives I began to understand the spread of mis-information, and the degree of near certainty behind climate science relative to the anthropogenic causes of climate change.

My decision to begin a sustainable business and to create a partnership with ALUS Canada came from two key learnings that I developed through seminars, course projects, and a fellowship program. The first, is that federal carbon pricing policies are not severe enough to meet their goals due to political acceptability. There is tremendous resistance to carbon pricing among the business community, although carbon pricing can actually increase business competitiveness. The second learning is that ecosystem services are extremely valuable, providing many unpriced benefits that can offer substantial climate change mitigation. Ecosystem services are unpriced in market economies, but the replacement cost for the benefits they provide is substantial and demonstrates real economic value. These two ideas motivated me to start a sustainable business to provide grass roots community leadership, and to share revenues with an NGO focused on increasing natural capital and ecosystem services.

Much of the push back against carbon taxation/pricing, is that markets will be skewed by government intervention. Market fundamentalists reel at the idea of carbon pricing, due to the added burden on business. While it is true that goods produced in jurisdictions with low or no carbon pricing are cheaper to produce, it is also true that environmental regulations can increase efficiency and competitiveness. To operate efficiently, market economies rely on conditions such as prices that signal scarcity, symmetric information held by both buyers and sellers, and security of property rights (ADAMOWICZ & OLEWILER, 2016). When these conditions do not hold for natural capital, and ecosystem services that flow from natural capital, then market failures ensue (Ibid). Market failure, in this case, occurs when markets have incomplete information, and do not represent the true prices of goods and services.

According to the Porter Hypothesis, well designed environmental regulations can lead to improved efficiency and increased competitiveness (Porter & van der Linde, 1995). The Porter Hypothesis challenges conventional economic theory, by contradicting the view that firms allocate resources in the most efficient way possible to generate maximum profits (Ambec, Cohen, Elgie, & Lanoie, 2013). However, traditional economic models do not consider ecological accounting and overlook the production of negative externalities by sectors within a market (Pigou, 1920). Negative externalities from emissions carry social costs borne by the public rather than producers of the emissions (Helbling, 2017). Firms and industries that emit untaxed GHGs operate sub-optimally because they fail to account for the total public cost of doing business. Resultantly they are less efficient than they could be if the market did not fail at accounting for the true cost of emissions. Regulation can increase business competitiveness by forcing firms to internalize the costs of emissions, and improve competitiveness by finding ways to innovate to cover newly accounted costs (Porter & van der Linde, 1995).

Over the past 40 years, the most substantial environmental change including acid rain control, the elimination of lead in gasoline, reductions in industrial water pollution, and the phase out of the production and new uses of ozone depleting substances and PCBs, are the direct result of the use of regulatory instruments (Winfeild, 2008). Climate change requires effective environmental policy intervention, which can create a win-win for the environment and the economy. Benefits from lowered emissions and carbon pricing are seen, “in new jobs, innovation, business development and export opportunities, while reducing our carbon pollution” (Clean Energy Canada, 2016). Policy intervention is a historically proven option, and it is necessary for GHG reductions; however, they should be stringent and should not provide unnecessary free rides to firms or sectors.

Policies targeted at clean energies must contain a mix of emissions pricing, and government support for green technology development. In a report by Ecofiscal outlining six recommendations for policies that complement carbon pricing, the first and foremost recommendation is that carbon pricing, with increasing stringency, should be the core of climate policy (Ecofiscal, 2017). Carbon pricing should be complemented by non-pricing policies so long as they are stringent. Stringent policies are effective because they can create stronger incentives to reduce emissions and larger reductions overall than non-pricing policies (Ecofiscal, 2016). Stringent policies should see prices on carbon increase steadily and predictably, making it more expensive to pollute, and creating more money that can be redistributed for clean technology development, research support, and support to foreign trade of low emission energy technology (Popp, 2016). Policies that complement carbon pricing should curtail negative externalities and fund positive externalities such as research and development that could have beneficial spillover effects (Popp, 2016).

Government policies will be a strong contributor to meeting Canadaian Nationally Determined Contributions because they target and attempt to repair one specific market failure - un-priced carbon emissions. However, due to governments' necessity to be re-elected, the government cannot be expected to carry the entire burden of achieving international agreements.

The Business and NGO community can and should support the federal government in this effort. Repairing markets, and pricing market externalities from carbon emissions are the most important step toward achieving Canadian Nationally Determined Contributions toward the Paris Climate Accord. The steps taken by the Pan-Canadian Framework for Clean Growth and Climate Change are one of the most important pieces of climate policies drafted by the Canadian Federal Government.

Unfortunately to reach NDC goals, the carbon price severity will have to increase dramatically. According to Mark Jaccard, "the carbon price (in 2015) must rise to \$250/tCO_2 by 2030 in order to meet Canada's Paris commitment" (Jaccard, M. et al., 2016). Relative to these projections, the current carbon price floor set by the federal government (\$10/tonne of CO_2 in 2018, rising each year to \$50/tonne of CO_2 in 2022) does not go far enough to reach the Paris targets. Non-market strategies and other policies will likely be necessary to close the gap.

Pricing carbon is crucial to achieving NDCs, but non pricing methods need to be added to the mix of solutions. Alternatives to aggressive pricing policies include nature based solutions. According to ndcpartnership.org:

> "Nature-based solutions combine climate change mitigation, adaptation, disaster risk reduction, biodiversity conservation, and sustainable resource management. That's why these approaches are often called "no-regret" options, meaning that the outcomes are fundamental for the maintenance of the economy and livelihoods in any scenario. They are often cost efficient measures and flexible in dealing with a constantly changing climate and its associated risks" (Johan Rockström & Tristan D. Tyrrell, n.d.).

Ecosystem services are unpriced benefits (services) received from natural capital. Natural capital is the world's stock of natural resources, which includes geology, soils, air, water and all living organisms. Natural capital assets are not considered by regular economic markets, although they should be as they provide free goods and services (Natural Capital Coalition, n.d.). Ecosystem services are non-market benefits derived by natural capital (such as freshwater lakes), whose processes and function benefit humans, consciously, or unconsciously, and both directly or indirectly (Costanza et al.,1997). Resultantly, ecosystem services do not have an inherent market value, but are often integral to the provisioning of clean drinking water, the decomposition of wastes, and resilience and productivity of food ecosystems. Correctly accounting for the market value of ecosystem services, will further correct markets to account for ecological benefits. Understanding the value of natural capital and ecosystem services will help policy makers and businesses make decisions to increase the investment toward ecosystem services from natural capital.

The City of Toronto tree canopy is a perfect example of ecosystem service value that is unpriced in financial markets. In a study by TD Bank, it was demonstrated that the Toronto tree canopy that amounts to $7.1 billion in structural value and provides over $6 million in household cost savings per year (Alexander & McDonald, 2014). The tree canopy is valuable to the City of Toronto for the ecosystem services, and hedonic value that it provides to the city on a yearly basis. The economic value created by the Tree Canopy is calculated in a TD economics report by Craig Alexander and Connor McDonald. Furthermore, trees have the added value of changing people's perception to make them feel younger, wealthier, and healthier. According to a study in Nature done that compares satellite images and individual tree data with questionnaire based self-reports of general health perception in the City of Toronto, people who live in neighborhoods with higher densities of trees report higher health perception and less cardiometabolic conditions (Misic et al. 2015). The findings equate the perceived improvement in health with raises of annual income equivalent to $10,000 per year. Green Spaces also correlate with a decline in sedentary leisure time, that can create healthier habits and activities for people away from work (Storgaard et al. 2013). The ecosystem services and personal well being provided by trees show value of natural capital that goes unpriced in traditional financial markets.

The Toronto tree canopy case study demonstrates the true economic and social benefit of natural capital. Investing in natural capital, in my opinion, is a very useful hedge against climate change. Ecosystem services not only mitigate climate change, but they also reduce the risk of the negative impacts from a changing climate. Preservation of natural capital, and development of ecosystem services are vital toward offsetting the strain from increased population, and economic growth. Based on this realisation, I decided to use my entrepreneurial drive, and my education to create a vehicle that can support Canadian NDCs and strengthen ecosystem services and natural capital.

Built environment emissions

Buildings are large energy consumers. GHG emissions from buildings have more than doubled since the 1970's and account for 19% of GHG emissions and 32 % of total global final energy use (Ottmar Edenhofer et al., n.d.).

Considering a life-cycle assessment starting with manufacturing of building materials to demolition, over 80% of GHG emissions take place during the building operation phase (UNEP,

2009) largely from consumption of electricity for heating, ventilation, and air conditioning (HVAC), water heating, lighting, and entertainment (US DOE, 2008). On average, most residential energy in developed countries is consumed for space heating, particularly in cold climates. 58% of the demand for energy in buildings was contributed by space heating in 1990 and 53% in 2005, while water heating contributed 17% in 1990 and 16% in 2005, appliances 16% and 21%, respectively, and cooking and lighting about 5% (IEA, 2008; UNEP, 2009). Retrofits for buildings will be an important action against emissions lock-in from low efficiency building standards of the past.

Toronto is Canada's largest city whose skyline is densely spackled with highrise towers and new condominium projects under construction. Of Canadian emissions, Toronto, and more broadly the Greater Toronto and Hamilton Area (GTHA) combine for 7% of Canada's total GHG emissions. Canadian GHG emissions are between 12-17% composed of building emissions, but in Toronto and the GTHA emissions from buildings account for 44% of localized emissions (The Atmospheric Fund, 2018). More specifically in Toronto proper, "52 percent of GHG emissions in Toronto comes from homes and buildings, primarily from burning natural gas to heat indoor spaces and water" (City of Toronto, 2018). This is an incredibly large proportion of Toronto's, and even Canada's emissions that are made up specifically from emissions in the built environment.

In response to the ongoing climate crisis, Toronto declared a climate emergency through a member's motion that was ratified through a unanimous vote on October 2nd, 2019 (City of Toronto, 2019). By passing this declaration, the city council acknowledged the climate crisis and planned to spend part of the city's budget toward moving Toronto in the direction of becoming a net-zero city (The declaration's commitments are included in the footnote below)[3]. The commitments within the declaration include specific changes to buildings and future retrofitting plans aimed at mitigating the large proportion of GHG emissions from Toronto's built environment.

Condominium Industry

The condominium industry plays a significant role in Toronto's built environment. The Greater Toronto Area (GTA) one of the top four fastest growing economic regions in North America. Parallel to economic growth has been the growth of Toronto's housing market and the number of High-Density Residential (HDR) dwellings (such as condominium and apartment buildings) in the city. The complex economics and politics within the HDR industry of the City of Toronto and surrounding GTA have sustainability and organizational implications for businesses operating within the region (Bos-Brouwers, 2010).

GTA housing construction has been in overdrive during the past two decades to keep up with large population increases, and development in the region. According to Urbanation, a Toronto-based consultancy, more than 1,000 condo buildings have been erected since 2000 which have been subject to loose environmental regulations (TVO, 2019). The excessive building and lack of regulation enforcement has led to shoddy workmanship and poor

[3] a) looking for opportunities to invest in and accelerate high priority emission reduction areas in TransformTO, such as building retrofits and transportation, as part of the 2020 Budget; b) exploring all viable and equitable financing mechanisms to adequately finance and encourage climate actions and adaptation in the 2021 Budget cycle; c) accelerating the implementation of TransformTO climate actions at every opportunity; and d) engaging job-seekers, workers, unions, academic institutions, relevant sectors, and social service agencies in the creation of a low-carbon jobs strategy that supports a decent work agenda, career pathways for equity-seeking groups, and the expansion of green industry sectors across Toronto (City of Toronto, 2019)

environmental performance in many condo buildings built in the past two decades. While the Toronto Green Standard, mandated sustainable design requirements by the city, was introduced 2006, but only on a voluntary basis, it has only recently become mandatory. The Toronto Green Standard is also only applied to new buildings and does not apply to existing high energy emitters.

The High Density Real-estate market has been a vehicle for mass wealth accumulation, but by the same token has led to quick and low-quality building practices. Further the management of owner maintenance fees have often been inappropriately delegated to inexperienced condominium managers. Mismanagement and corruption regarding condo budgets raise the cost of living for owners and renters due to high condominium fees. Mishaps in the condominium market are a result of the rapid expansion, and the inability of regulators to keep up with development.

The legal structure of HDR condominium buildings in the GTA is governed by the Condominium Act, 1998. One of the key features of the act is the establishment of a board of directors who "manage the affairs of the corporation" (Condominium Act, 1998, S.O. 1998, c. 19, n.d.). Interestingly, boards of directors are elected by owners of owner-occupied units in the condominium, but ownership, or even residency in the condominium is not a qualification of board membership. This means that anyone can be elected to a board position that allows that person a degree of control over the affairs and finances of the corporation. Often the finances of a corporation amount to multimillion-dollar annual operating budgets.

Organizations such as Leadership in Energy and Environmental Design (LEED) attempt to reduce the environmental impact of buildings in the post construction phase. All too often however, the buildings are built with the purpose of circulating capital and quickly flipping real estate, that builders don’t take accountability for poor environmental performance. Infrastructural choices have long-lasting effects on emissions and may lock a country in a development path for decades (Blanco et al., 2014). This is evident in the massive call for retrofitting by the City of Toronto. The GTA’s HDR buildings need environmental overhauling, as energy loss from existing buildings is responsible for a large portion of GHG emissions alongside the actual building process.

Operational budgets that account for the retrofits also account for delivery of condo services on a monthly basis. A large portion of condominium fees go towards service and maintenance. The maintenance industry is no exception to the need to incorporate sustainability into the HDR market. Much of the industry is composed of aging businesses that do not consider sustainability as part of their business strategy. As such there is an opportunity for new environmentally focused service providers to lead by example and set the precedent for sustainability within this industry. Afterall, the maintenance industry services one of the most emissions intensive sectors in Canada, and for that matter in the developed world. It would be a step in the right direction for businesses to re-enforce the TransformTO initiatives, due to the state of climate emergency in Toronto.

However, the impetus for service businesses to adopt sustainable practices is minimal as vendors do not increase profit or decrease prices from adoption of environmental practices. The buyers (condo corporations) often are in a race to the bottom as it relates to service fees for condo maintenance. With lack of incentive from buyers, the industry will not pivot toward sustainability premiums in condo fees. Demand for green services would raise the level of sustainability adoption among businesses in this industry, however under the current condition this is not the case. This may have to do with lack of awareness, or interest from key decision makers in the chain of command for service purchase within the Toronto condominium corporation. Decision makers are appointed without necessary training or experience in board membership. Moreover, secondary decision makers – condominium managers, do not receive mandatory sustainability, or environmental training. This results in a group of decision makers in the Toronto HDR condominium industry that is largely unsophisticated and uneducated around green buying, and environmental performance of buildings, despite the existence of organizations such as LEED (Leadership in Energy and Environmental Design) and Canada Green Building Council (CGBC).

The role of managing condo corporations, and the individuals entrusted with these roles are crucial to the future environmental performance of the city. While condominiums are seen by most as urban dwellings, it is less obvious that these are corporations with their own governing principles, laws and by-laws. According to section 27 (1) of the Condominium Act, 1998 (the Act), "a board of directors shall manage the affairs of the [condominium] corporation"(Condominium Act, 1998). Condominium boards are the final decision makers for all Ontario condominium corporations, and as such they are made up of at least three members. To qualify for board membership, the criteria is not very stringent. The applicant must be over seventeen years of age, may not be an undischarged bankrupt and must be mentally competent. Any further qualification requirements, which do not necessarily exist, would be set out in the by-laws of each condominium corporation. This means that ownership, education, and demonstrated competence, or lack of conflict of interest do not exist as requirements for a decision-making position in one of Ontario’s condo boards. Recent amendments to the condo act, however, do make it necessary for board members to disclose whether or not they own units in the condo, own a business that services the condo, or have been previously convicted of an offence under the Condominium Act (David Taub, 2019).

Condominium living is gaining an increasing share of total dwellings in the GTA. As such, the cost associated with living in a condo can have direct impacts on inflation, and many other run off effects for the economy. Unfortunately Ontario condominium management has historically been red flagged for corruption, mismanagement and poor decision making.[4][5] As the number of condominiums increases in Ontario, and Toronto more specifically, so too does the necessary management capital. However, condo management is usually an underpaid role, and is not usually a hotspot for talent. As the need for competent condo managers expands it is not matched by growing salaries that attract talent. "According to PayScale, a salary calculation website that collects salary statistics, the average condominium property manager in Toronto makes $55,599 per year. That is lower than the average salary across all jobs in Toronto, which is $58,279 per year. That might be okay if being a property manager took a below-average level of training and commitment, however this is not the case at all" (Altin Nani, 2019).

An article published by Toronto Condo News in December 2017 states, "Property management is not something most choose as a profession. There is no traditional career path". Becoming a property manager is rarely someone's first choice as a profession, but the skill set required would objectively suggest otherwise. Experience in finance is needed to manage the millions of dollars of assets, communication skills are required to provide high quality customer service, basic engineering is recommended to understand the numerous maintenance issues that can occur (Altin Nani, 2019).

[4](TAMSIN MCMAHON, 2016)
[5] (Armand Conant, 2019)

Considering that condo managers are in charge of multi million dollar budgets that dictate condo maintenance fees, which companies receive contracts, and the marginal increase or decrease in rents, it should be alarming that these managers are not adequately educated, regulated, and compensated to deter corruption. This ties back to the problem of high emissions and energy consumptions from unsustainably built buildings. Buildings must be properly managed if they are to receive the adequate sustainability upgrades necessary to lower their climate change impact. However, poor management and corruption can distract condominium boards from the necessary changes that need to be made. Of course, the government can mandate change and even provide funding, however if maintenance budgets are being embezzled or mismanaged, the necessary upgrades and retrofit can be left on the back burner.

Market Opportunity

The market for condominium service providers is growing. As building increases year over year, and demand for housing in Toronto continues to outpace supply, there are more opportunities for businesses that service the condominium industry. Becoming an established player in the facilities service market comes with the opportunity to grow a profitable business, create job opportunities for Canadians, and become an environmental leader within the industry while partnering with NGOs and supporting sustainable initiatives. Many businesses take advantage of the relatively low barriers to entry in the high-rise window cleaning industry in which ***ecobc*** is situated. Start-up costs in the facilities maintenance industry costs are very low relative to more capital-intensive industries. This fact presents both an opportunity and a pitfall for many new businesses. Often under-educated, and in-experienced operators enter the space, and can make crucial mistakes due to lack of knowledge or experience that can eventually force them out of the market. Either they are undercapitalized, underpriced, or under-staffed and end up closing shop a few years after the venture begins.

An important opportunity within the facilities service sector is to become a leader in sustainability among building maintenance businesses. The first step to becoming a leader among SMEs in this industry is to partner with an environmental stakeholder. By partnering with ALUS Canada ***ecobc*** provides annual contributions that help the Environmental NGO build natural capital and strengthen ecosystem services within Canada. By sharing this story with clients, and industry professionals, ***ecobc*** will set an example for others in the industry.

Another opportunity to demonstrate leadership, is to create a sustainability reporting practice. Research shows that companies who practice sustainability reporting often outperform companies who do not report (GRI Network, 2013). By providing annual sustainability reporting, ***ecobc*** will have practices in place that demonstrate adherence to sustainability standards on an annual basis. Further, ***ecobc*** would be the first facilities maintenance business involved in high rise window cleaning to provide sustainability reporting according to the GRI global database.[6] Engaging in sustainability reporting will increase ecobc's transparency and enable the organization to make better decisions that create social, environmental and economic benefits for all its stakeholders.

Risks are present with all business ventures, even in a mature and relatively stable industry. Within the condominium and facilities maintenance industry, there are a number of risks that businesses must account for. These include displacement risk by technological development, risk of workplace death or injury, and risk of reputational damage. As robotics

[6] (https://database.globalreporting.org)

technology improves, more firms are developing automated building maintenance robots. While they remain very expensive and inefficient at present, they pose a looming risk that may threaten the future of this business. Further, high risk jobs that require working at heights always carry the risk of death or injury to the owner-operator, or one of the company's employees. Lastly, the risk of reputational damage is incredibly high. In a relatively small industry, reputation is everything. Reputational damage, from being deemed a low-quality operator, from being seen as unprofessional, unsafe or in any way below average is another exposure to business risk. Due to the size of the industry, word travels fast, which allows less room for error. Risks in the condominium service market exist, but are not a significant barrier to entry.

Sustainability among condo service vendors is rare. Often the use of brand names that have a sustainability connotation, is more of a moniker than a signal of true sustainable practices. While some maintain they use "eco-friendly" products, this amounts to a claim that they will not use toxic chemicals, not necessarily that they have a sustainability framework in place. Most businesses cannot claim to be carbon neutral, or carbon negative. They use gasoline powered trucks, corporate vehicles, and personal vehicles.

ecobc plans to be a sustainable business. By moving the buck past the use of non-harmful cleaning materials, ***ecobc*** is targeting net positive environmental impact, along with zero emissions throughout the business cycle. ***ecobc*** can contribute to mitigation efforts by providing sustainable livelihoods, and behavioral choices for employees. By implementing best practices for sustainable business and collaborating with environmental stakeholders such as *ALUS Canada*, ***ecobc*** can make a significant contribution. Sustainable best practices include use of an electric fleet, use of sustainability accounting practices, and donating a portion of profits to environmental charities or NGOs. ***ecobc*** has entered into its first partnership towards sustainability with *ALUS Canada*. By combining efforts with environmental NGO *ALUS Canada*, ***ecobc*** uses its efforts in one sector to support enhancing carbon sinks through *ALUS Canada's* work in developing ecosystem services. Incentives for implementing sustainable business practices include brand positioning, sustainability future proofing, access to government grants and contracts. A commitment to carbon neutral business operations, in combination with taking on an environmental steakholder provides a clear path for ***ecobc*** to grow towards sustainability.

ecobc competes for service contracts in the facilities maintenance industry. Presently the core offering of the business is high rise window cleaning using rope access. ***ecobc*** targets condominium buildings between 28 and 35 stories with complicated features such as Juliette balconies. This allows the company to be focused on a niche within a niche industry. Due to early adoption of new access methods, ***ecobc*** can provide competitive services on buildings between 28-35 floors more efficiently than competitors using outdated access methods. The new method, called rope access [7] allows the company to reduce costs and labor time, and strengthen the competitive advantage.

The trajectory of ***ecobc***, is to become a diversified sustainable service provider in the condominium maintenance service industry. This includes retrofitting condominiums, by reducing the heat transfer of windows. Services could include facade restoration, and window

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[7] Rope access or industrial climbing is a form of work positioning, initially developed from techniques used in climbing and caving, which applies practical ropework to allow workers to access difficult-to-reach locations without the use of scaffolding, cradles or an aerial work platform. Rope access technicians descend, ascend, and traverse ropes for access and work while suspended by their harness. Sometimes a work seat may be used. The support of the rope is intended to eliminate the likelihood of a fall altogether, but a back-up fall arrest system is used in case of the unlikely failure of the primary means of support. This redundancy system is usually achieved by using two ropes - a working line and a safety line (https://en.wikipedia.org/wiki/Rope_access).

glazing since windows are the largest source of energy loss in a condominium building. As of 2015, Toronto condominiums were benign built with little to no environmental standard adherence. There are thousands of under performing condos in the city that require updating, and retrofitting. Retrofitting seems like a plausible future addition to the ***ecobc*** service offering, which serves the company's mission and vision.

The highest environmental impact from business operations are carbon emissions from corporate vehicles, water consumption for pure water cleaning, and the use of non recyclable squeegee rubbers. Window cleaning businesses are notorious for discarding unrecyclable rubber. There is no solution to this problem as rubber cannot yet be adequately recycled, but according to research at McMaster, this could soon change. As the business matures it will seek to solve the squeegee rubber problem, by applying new science in recycling rubber to the old problem of not being able to recycle rubber in a useful manner.[8]

Environmental reporting and accountability is featured prominently in the business plan. Within the plan the framework for sustainability planning, sustainability reporting, and *ALUS Canada* partnership agreement all show ***ecobc's*** commitment to showing sustainability leadership. The company will improve environmental performance on a year over year basis. In order to improve performance, sustainability metrics will be tracked and measured each year by using the reporting criteria found in the business plan.[9] By tracking environmental performance, ***ecobc*** will be able to improve as the business moves towards innovating and creating sustainable solutions to reducing impact of transportation, office supplies, and operational supplies. By

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[8](https://brighterworld.mcmaster.ca/articles/mcmaster-chemists-find-new-way-to-break-down-old-tires-into-material-for-new-ones/).

[9] See Appendix titled 'Sustainability Reporting' in ecobc Business Plan.

reporting on sustainability ***ecobc*** will remain accountable to stakeholders including ALUS Canada and customers of the business. The incentive toward sustainability relative to profit, is to use the sustainability framework, and environmental performance to bolster bidding on government contracts, improve employee retention, and to achieve higher-order satisfaction from the organization's work. Therefore, by executing on sustainability reporting ***ecobc*** will have a guide toward higher environmental impact and higher profit based on expected demand for sustainable businesses.

ecobc's environmental decision making framework will be guided by the sustainability plan.[10] This plan establishes drivers, risks, and opportunities for the business, followed by an action plan. The action plan outlines the inclusion of environmental stakeholders, annual contributions to sustainability, and a starting point for sustainability accounting. By tracking sustainability and improving on the sustainability metrics, ***ecobc*** strives to be recognized as the most sustainable business within the Toronto facilities maintenance industry.

Conclusion

Canada has responded to the Paris Accord by providing ambitious Nationally Determined Contributions. The Pan-Canadaina Framework on Clean Growth and Climate Change is the policy that supports Canadian NDCs and is largely skewed toward taxation of carbon emissions. By taxing carbon emissions, governments implicitly recognize that markets fail to account for the negative externalities involved in the delivery of goods and services. When carbon emissions

[10] See Appendix titled 'Sustainability Plan' in ecobc Business Plan.

are not priced into the price of goods and services, the market price is artificially low and results in a market failure.

However, the tax on carbon emissions is problematic because it is not high enough to reflect the true price of emissions, and reduce current emissions to targeted levels. Raising taxes on carbon emissions to prices necessitated by Canada'sNationally Determined Contributions would not be acceptable by voters, and would not allow the government to be re-elected. To fill in the gap between emissions reductions and the NDC, other methods must be used.

During my studies, it occurred to me that the largest impact I can have as a single agent, is to create a business that supports Canada's Paris Agreement goals from the ground level. In doing so I have created ***ecobc,*** a sustainable business in the facilities service industry. My business has partnered with *ALUS Canada* to further support vital ecosystem service delivery. Ecosystem services are important, yet unrecognized by traditional economic markets for the benefits offered. As such they are underrated for the beneficial effect they have towards climate change mitigation. ***ecobc's*** SME-NGO partnership not only increases the businesses sustainability profile through stakeholder input, but also provides funding for NGO program delivery. In this way ***ecobc*** is on the path to becoming a sustainability leader in its industry.

Small and Medium Sized Enterprises are the backbone of the Canadian economy and they are a key factor in achieving Paris Climate Accord goals set by Canada through Nationally Determined Contributions. Carbon pricing is an effective and necessary strategy that should be re-enforced by the Canadian small business community. To become a global leader in sustainability, the importance of sustainability leadership within the small business community cannot be overlooked. Grassroots movements can help to bridge the top down carbon pricing scheme outlined in the Pan Canadian Framework for Clean Growth and Climate Change.

Environmental leadership is necessary now, more than ever in the buildings sector. The built environment accounts for a significant portion of Canadian emissions. Toronto is specifically prone to high energy consumption and related emissions due to urban density and use of vertical space. The city is experiencing a boom in the number of condos built each year, alongside a climate emergency declaration. Part of the plan associated with the declaration will be an ambitious campaign to retrofit inefficient buildings in the city. Condo management will play a key role in the amelioration sustainability performance in the built environment. As such they will look toward key leaders, consultants, and industry experts for guidance.

ecobc strives to be a leader in sustainability for the facilities maintenance industry. With the input of key stakeholders, and adherence to sustainability reporting, the path towards growth will also be a path toward sustainability. Moving forward, the businesses strong foundation will hopefully position ***ecobc*** to diversify the service offering to include key building retrofits to help mitigate the impact of the built environment, while supporting the delivery of ecosystem services.

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