

***GREEN ECONOMIC INITIATIVES IN SOUTHWESTERN ONTARIO:  
CHALLENGES AND OPPORTUNITIES***  
**MIKE NAGY, ALISON BLAY-PALMER AND NASIM ADELI**

This study is part of the *Research Partnerships to Revitalize Rural Economies* project, a research initiative of The Monieson Centre at Queen's School of Business funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) Partnership Development Grant program, as well as significant partner-based funding. Project resources are available online at [www.economicrevitalization.ca](http://www.economicrevitalization.ca).



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**REPORT PREPARED FOR THE MONIESON CENTRE, QUEEN'S BUSINESS SCHOOL  
June, 2014**

## INTRODUCTION

Nasim Adeli and Alison Blay-Palmer

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Climate change poses significant global challenges for the 21<sup>st</sup> century. Given the reach of the problem, it is well recognized that climate change requires responses from the local to the global scale. Within this context, it is important to shift economies towards a more sustainable green growth trajectory in order to develop lasting, sustainable solutions.

In the wake of the 2008 economic recession, UNEP reported that 15% of the estimated US\$3.1 trillion in global stimulus funds were green in nature, with South Korea (at 81% of total stimulus package), China (38%) and the EU (59%) leading the world in the amount of stimulus funds invested in environmental projects (Figure 1, ACCA, 2012)<sup>1</sup>. Four years later, in 2012, UNEP held the 2012 UN Rio +20 conference centred on the theme

“Green Economy” to identify how economies can achieve “green growth”. It examined the benefits of a green economy and how it can integrate economic development with environmental sustainability in all countries regardless of their economic structure and their level of development. Since then, green growth has continued to gain momentum with some of the drivers being peak oil, unemployment, economic stagnation and climate change (UNEP 2012).

The Green Economy as a concept has experienced rapid growth due to a greater emphasis on the sustainability of products and services and a changing demand and has received significant international attention over the past few years as national governments and business leaders seek new opportunities. This has developed a rapidly growing literature including academic articles and new publications on the green economy from a variety of prominent international organizations, national governments, think tanks, experts, non-for profit organizations and others. Recent publications on the green economy by the United Nations Environment Program (nd), the United Nations Conference on Trade and Development (UNCTAD), the International Labour Organization (2012), the World Bank, the Organization for Economic Cooperation and

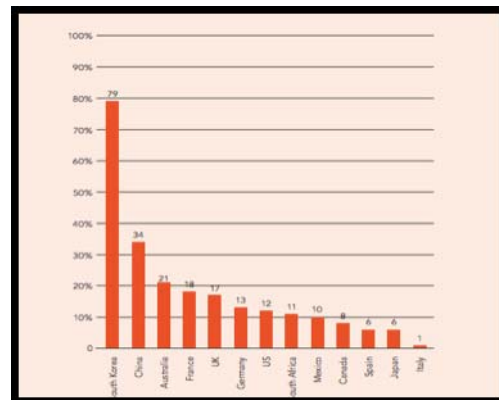


Figure 1- Percentage of economic stimulus money committed to environmental projects  
Source: ACCA, 2012

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<sup>1</sup> Canada used 8% of its stimulus dollars to support green economic activity.

Development (2013) have begun to clarify the concept of the green economy and attempt to address knowledge gaps. As well, a number of non-government organizations and partnerships have also developed in recent years, with the purpose of promoting green economy. Apart from international organizations, national governments and municipalities have also taken numerous actions to shift towards a greener economy.

### **Lack of definition**

The *Green Economy Report* under the 2008 UNEP Green Economy Initiative was developed in consultation with think tanks, NGOs, governments and business. They define the green economy as one that results in “...improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive.” (UNEP nd). However the prevailing literature highlights that there is not yet an internationally agreed upon definition of the green economy (UNDESA, UNEP, UNCTAD, 2011) because there has not yet been widespread agreement on what it should include. The lack consensus about the definition of or universal principles for green economy as well as the emergence of interrelated yet different terminology such as ‘sustainable economy’, ‘low carbon development’ and ‘green growth’ made the Rio+20 negotiations challenging. Not unexpectedly, the overall language used to describe and define the green economy varies from industry associations, government agencies, employers, and educational institutions, (ECO Canada, 2010). Further problems arise when there are attempts to translate the idea into practice.

Despite these qualifications, useful definitions and framings have emerged. According to the European Environment Agency, the green economy is a fairly simple concept. At the most basic level, “it generates increasing prosperity while maintaining the natural systems that sustain us” (EEA nd). ECO Canada uses a life cycle oriented calculus as it defines the green economy as, “The aggregate of all activity operating with the primary intention of reducing conventional levels of resource consumption, harmful emissions, and minimizing all forms of environmental impact. The green economy includes the inputs, activities, outputs and outcomes as they relate to the production of green products and services.” (ECO 2010: 3) This definition is both broad and prescriptive. The term *primary intention* makes this definition rather vague. For this reason ECO Canada identified the need for definitional criteria to

categorize and understand green economic activity. These criteria include technical and economic perspectives complemented by an understanding of development processes. Van Jones (2008) posits that the green economy offers solutions to both social inequality and environmental challenges and offers the possibility to broker a 'Green New Deal'. He suggests that in the emerging green economy workers in declining industries must be re-trained, paid a reasonable wage, and that such people should be categorized as creating part of a new economy. However many consider such a broad viewpoint of employment too vast because it does not provide adequate details about the particular areas of focus or skills essential to support the green economy. Instead, others propose the merits of more refined perspective by "...developing "conservatively categorized" definitions and job data, remarking that such an approach should call upon "rigorous metrics to determine what counts as a green economy/job." (Business Council, 2009 in ECO Canada 2010:14). Others use jobs in key sectors responsible for supplying the majority of the green products and services to all other industries/sectors to help reduce environmental impacts (Globe Foundation, 2010). The transition to a green economy will not be without consequences. In the view of the International Labour Organization some workers may be hurt in the economic restructuring toward sustainability though winners are likely to outnumber losers. The ILO estimates that the green economy could result in up to 60 million new jobs in the next two decades. In keeping with Jones, they envision the potential for this work to raise people out of poverty and as a means to promoting social inclusion (ILO/Green Jobs Initiative 2012).

### Green jobs and economic development

Van Jones identified sectors encompass the green economy including: renewable energy, energy efficiency, green building, water management, transportation, agriculture and horticulture, woodworking, manufacturing, materials management and waste stream diversion, retail, non-toxic printing and non-toxic cleaning (Jones 2008: 147-148). Chapple et al. (2011) discuss the green economy as including both traditional and new sectors. Traditional industries, such as utilities, may be changing the way the power is sourced, relying more on alternative fuels and renewable energy. New industries, such as biofuels, may introduce innovative products that reduce dependence on traditional or dirty sources of energy and be avoid conflicts with 'food for fuel' scenarios where virgin food grade crops are grown specifically for fuel which can result in regionalized calorie shortages and price

spikes . In their study of California, they carve the green economy into six tranches: energy research and services; environmental services; green building; green manufacturing; green transportation; and, recycling. Regardless of how the green economy is characterized, it is hybrid in nature existing along a spectrum of traditional to new green industries and associated job and economic development opportunities.

A review of 25 regional and national reports on the green economy by Chapple revealed that clean energy is “at the core of the green economy” (2008: 1). The reports vary in the degree to which they emphasize environmental and/or job quality. While, 16 of the reports mention transportation and infrastructure as part of the green economy, only three focus on job quality, typically defined as well-paid jobs with benefits and opportunities for advancement. This underscores the compartmentalization of ‘green economy’ from a ‘just economy’ as environmental goals are not necessarily linked with social justice issues. As Agyeman and his colleagues remind us,

...sustainability . . . cannot be simply a ‘green’, or ‘environmental’ concern, important though ‘environmental’ aspects of sustainability are. A truly sustainable society is one where wider questions of social needs and welfare, and economic opportunity are integrally related to environmental limits imposed by supporting ecosystems.” (Agyeman et al. 2002:78).

### **Employment and Green Jobs**

Clearly, the green economy influences employment in terms of jobs being adapted or reallocated, with existing workers having to expand their pre-existing skill sets and/or learn new skills. As the green economy continues to evolve, it is evident that in some cases skill gaps are emerging. In Ontario, the Trillium Foundation, stated that the green economic sector is expected to experience serious labour shortages in years to come”(Ontario Trillium Foundation, 2008). In this regard, ECO Canada (2010) indicates that increasingly specialized skills will be needed to support green economic activity in: wind and solar energy; battery technology and power electronics; sustainability management and energy efficiency; environmental finance and emissions trading.

As part of the transition to a green economy, it is noted that there has been more diversification of existing skills to support the green economy among existing professions. Additionally, in keeping with debates about what constitutes a green economy, there are a wide variety of perspectives concerning the definition of a green job and whether a green job is defined by practices or production. There are also questions about how to measure

the number of green jobs. ECO Canada has done a great deal of useful work in this area. ECO Canada (2010) defines a green job as one that “works directly with information, technologies, or materials that minimize environmental impact, and also requires specialized skills, knowledge, training, or experience related to these areas: (2010: 4). Oxfam, from the other hand examines the green economy in America with a particular focus on green jobs that build resilience to climate change. They determined that two million people were working in fields that contribute to building resilience to climate change across the US (Oxfam America, 2010)

### **Green Economic Development**

In a globally competitive world, regions increasingly seek to develop and retain a vibrant economy. Chapple (2008) states that in transitioning to a greener economy, cities are often confused about whether to follow economic growth or development, as well as whether to seek high-quality jobs or simply job creation of any kind. However it is important to point out that the green economy will develop in different forms depending on the region and the regional/ local economic strengths and weaknesses (Chapple, 2008). Consistent with other sectors, interventions are mainly effective if they build upon local strength (Blay-Palmer et al. 2013; Marsden 2012). From a local economic development perspective, policies, standards, regulations, incentives, and marketing programs present opportunities to form the green economy.

### **Green Economy in Canada**

There are estimates that the global green economy is projected to be worth more than US\$6 trillion by 2015 up from US\$5 trillion in 2009/10 (HM Government 2011). In a report for the Canadian Federation of Municipalities, Thompson and Joseph (2011) estimated that the rapidly developing Canadian sustainability market (green technologies and services) was worth \$2.3 billion in 2010 and was expected to reach \$3.7 billion by 2014. This is favourable when compared to other energy development opportunities, the “green economy sectors provide high levels of employment and gross domestic product (gdp) impact per dollar invested – from 10 to 20 person-years employment per million dollars invested. The oil and gas extraction sector, by comparison...creates relatively few jobs per dollar invested – a third to a sixth of that produced by green economy sectors.” (Thompson and Joseph 2011: 4)

In Canada, the term “green economy” has been used in a number of ways. According to Chapple (2008), the federal Minister of the Environment has described it as the “*great re-set*” that “*better integrates our environmental objectives into Canada’s economic structure and infrastructure.*”(Kent, 2011 in Thompson and Joseph 2011: 10) The government has also described it as “*job creation and energy production in an environmentally sustainable way.*”(Kent, 2011) Others use it almost synonymously with renewable energy development, while still others include research and development in high-tech, innovative and niche industries. The Canadian Institute for Environmental Law and Policy published “*A Green Economy for Canada*” report that states that Canada has much to gain from the transition to a green economy, and would have much to lose if it was to ignore it. The report identifies four steps to shift to a greener economy: a call for federal leadership; to advance a strong national dialogue and development of a shared vision; to establish clear price signals and invest in technology, R&D and green business; and, federal leadership on the international stage.

The prevailing literature on Canada points to the fact that the main constraints on the emerging green economy seem to be policy-based. Hence the federal government’s role is to develop and support policies that create and foster the conditions for innovation, efficiency and ultimately job creation and growth (Thompson & Joseph 2011). Municipal governments also play an important role in the Canadian green economy. From a practical perspective, they operate closest to the people, implement policies and tend to be less partisan and less prone to ideological gridlock as a whole (Thompson & Joseph 2011) FCM has identified three fundamental principles, each supported by a set of specific policy measures that the federal government could introduce to provide the policy context for strong municipal action in creating a greener economy for Canada: 1. To act locally; 2. Make value for money a top priority; and, 3. Work with the market where the market can work.

Through an in depth literature review, four main areas were determined by ECO Canada (2010) as the top areas of opportunity in Canada: *Renewable Energy & Energy Efficiency; Buildings, Retro-fitting & Construction; Transportation & Alternative Transportation; Waste Recycling & Waste Management.* In a report by Toronto and vicinity officials, utilities, construction, manufacturing, and retail trades were identified as the four



sectors that likely would be local winners in the coming years, especially from a green employment perspective. The definition of what constituted an opportunity sector was defined based on local circumstances and economic conditions.

A stated in a recent report for the Metcalf Foundation on the economic prosperity and the green economy in Canada,

The green economy is not an end in itself; rather it is a means towards a shared and lasting prosperity. The economy must deliver the capabilities for people to thrive and for communities to flourish. Beyond simply delivering goods and services, this task involves maintaining and enhancing social and environmental well-being. Stability in markets, security in employment, ecological integrity, sustainability in supply chains, fairness: these are some of the conditions on which present and future prosperity depends. (Jackson and Victor 2013: 15)

### **Role of SMEs in the Economy**

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In the economic development context, SMEs are considered to be an important part of economic fabric. Scholars who have studied small and medium enterprises (SMEs) emphasize that in both developed and developing countries SMEs represent a key factor for economic growth. They play a significant role in employment and income generation (Fox, 2005). SMEs are even more vital for those losing their jobs in privatized, restructured or bankrupt state owned enterprises (Acs and Audretsch, 1990). In the current international market with strong emphasis on efficiency and competitiveness, firms are finding that specialization of the type associated with SMEs is crucial in the global supply chain for achieving effective economic growth (Global Reporting Initiatives, 2012). SMEs are also vital in reducing poverty incidence in many countries (Aragon-Correa et al, 2008). On the one hand, they play a crucial role in generating entrepreneurial skills and promoting innovation (Foxon, 2002). They give entrepreneurs opportunities to access and learn how to organize resources, as well as space to exercise their talents and gain experience (Johnson and Loveman, 1995). On the other hand, SMEs are important sites for application of new technologies to better meet consumer needs, and contribute to innovations in relatively concentrated economies (Fox, 2005). Moreover, SMEs support building up an adaptable, interlinked system that contribute to developing a competitive market system (Johnson and Loveman, 1995). Such linkage is crucial in attracting foreign direct investment. Consequently SMEs can be one of the main drivers of progress, predicted to play a key role in the green economy.

## Importance of Becoming Green

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The contribution of SMEs is essential in the shift towards the green economy. Those SMEs aiming to thrive in the future have already taken step to embrace sustainability and in some cases lead the way. However given various circumstances, shifting to a green economy has increasingly challenged decision makers' ability and capacity. In this context, shifting the economy along a green economy path requires transforming jobs, occupational profiles, and business operations in uncertain ways. New skills are required not just for competitiveness and innovation but also for adjusting to climate-change policies and regulations. The transition towards green economy demands that workers' skills are adapted and that new generations are educated to take up appropriate skills to meet the shifting demand. In this regard, market and policies can play important role in facilitating the structural adjustment, and translating it into practice while minimizing the associated social costs (UNEP 2013).

Ensuring that SMEs fully participate is crucial to sustainable practice. Accordingly the challenge is how to move towards an economic system that would benefit more people over the long run. Transitioning to a Green Economy will require a fundamental shift in thinking about growth, production of goods and services, consumer habits and adapting and complying with regulations. Also it requires a full understanding of why so few plans and projects are adapted and why others projects fail. Although SMEs may be more flexible in adapting to the fast changing market environment compared to larger firms, moving to a greener economy may be a great challenge for them,

Small and medium-sized enterprises (SME) account for the bulk of all firms, but they often face challenges in the later stage of the innovation chain, specifically in financing and getting products to market, and often have weaker capabilities for innovation than large firms. Policy can help to improve their access to finance and information, foster their participation in knowledge networks, and support the development of skills. (OECD 2011: 51)

For this purpose, identifying the challenges and opportunities is crucial to our understanding of a green economy shift and developing the ability to move forward.

## SMEs in Canada

### Canadian SMEs and the Economy

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In 2005, Canada made progress in developing a comprehensive environmental strategy (George and Kirkpatrick 2007). The Green Plan was an attempt to translate the concept of sustainable development into a range of qualitative and quantitative national objectives and policy measures. However as stated by Industry Canada (2012) sustainable development though built in government structure, did not resulted in practical changes, policies and actions in the economic decisions.

Canadian SMEs<sup>2</sup> play a major role in the national economy. According to a report prepared for Statistics Canada, SMEs account for more than 50% of Canada's private sector GDP, 60 % of all jobs in the economy, and 75% of net employment growth. As of December 2012, there were nearly 1.2 million small and medium businesses in Canada (businesses with at least one employee on payroll) representing 5.1 million (48.3% of Canada's total workforce). Consequently the success of the SMEs clearly influences the well being of the Canadian economy and society (Statistics Canada, 2013; Leung and Rispoli 2011).

### Canadian SMEs to Go Green

There are limited data available on the challenges SMEs face in the context of environmental behaviour. However gathering information from various sources the overall barriers are listed in the table below. In the view of Heidrick, (2002) barriers are so resilient that they do not allow the drivers to overcome them. This is itself a very challenging problem. As Chapple et al. posit, "Innovation does not necessarily foster growth. It is a boost to traditional firms, but emerging green firms may need additional tools and the support of local networks to transform new ideas and products to new markets." (2011: 5).

### Barriers Canadian SMEs face to become green. Various sources

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Costs,

Technical knowledge (Environment

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<sup>2</sup> Industry Canada defines a small business as one that has fewer than 100 employees (if the business is a goods-producing business) or fewer than 50 employees (if the business is a service-based business). A firm that has more employees than these cut-offs but fewer than 500 employees is classified as a medium-sized business.

	Canada),
Communication barriers to environmental behaviour (Environment Canada 2011)	Limited Awareness and knowledge on environmental issues (Doern, 2009)
Low SME eco literacy	Weak appreciation of environmental regulations
Reported difficulties in obtaining and interpreting environmental information	Lack the ability to identify and formulate their own information and knowledge gaps
Identify and formulate their own information and knowledge gaps	Limited financial resources (Heidrick, 2002).

### Regulatory Barriers

In the context of government regulation, SMEs face higher costs than larger businesses (OECD 2013; Industry Canada, 2010) due to economies of scale. This is a drawback for the sector as a whole. Even assessing the cost of compliance from the SME's viewpoint is challenging especially when taking into account the number of requisites imposed by the government through legislation and administrative policies. CICA (2013) report that restrictive regulations from permitting tax regulation and administration burdens hinders SMEs ability to succeed in new markets (CICA 2013) According to the World Bank Group Enterprise Survey on the tax burden for medium-sized businesses, tax rates (top three) and burdensome tax administration (top eight) are a top obstacle globally (CICA, 2013). Although addressing the issue of regulatory burden is not easy the tax authorities are eyeing into areas where compliance for SMEs could be enhanced (i.e a easier set of transfer pricing rules and documentation requirements for SMEs)

### Government Role

In the context of the green economy, there are numerous issues specific to the national context. As stated above, Canada has one of the largest economies of the world, and is highly dependent on international trade with diversity in its economic activity. Its natural resource sector is central to economic development. The Canadian green economy, from this perspective, is only limited to the manufacturing and services sectors, while the dominant natural resource sector falls outside of it and in fact challenges Canada's ability to construct a sustainable economy with Canada having the second lowest demand for green

skills. The national report on the green economy in Canada refers to SME in one single stating: “Small and medium-sized enterprises (SMEs) play a very important role in the Canadian economy”(Sustainable Prosperity Report, June 2012). It is also important to acknowledge the importance of community connections associated with the green economy and the ways this can make communities more robust. As Jackson and Victor (2013) remind us government can play a role in fostering SMEs as they work to develop within communities,

One of the characteristics of these new energy companies is that they tend to be smaller — and often more embedded in the community — than conventional providers. There are several reasons for this. In the first place, many of the green energy companies are recent start-ups, developing new approaches to energy supply and energy efficiency more or less from scratch, unencumbered by sunk capital or entrenched mindsets. But there is another important reason for this difference. Renewable, sustainable energy sources tend to be local in nature; as do the solutions that will make people’s homes and businesses more energy efficient....Financing for community-based energy is critical. It is vital to get the economic conditions right for communities to be able to invest in local solutions to energy needs. (2013: 27)

### **Framing the report: The Ontario Green Energy Act**

The Green Energy Act of 2005 has been at once controversial and ground-breaking. As reported in the next chapters, the policy was visionary – modelled after the German example, it set out to defer the development of future mega-energy generation projects (e.g. nuclear) by developing a network of distributed, small-scale alternative energy projects throughout Ontario. It pays a premium for this energy, encouraging wind and solar installations, but as a result, in conjunction with the development of natural gas plants, was able to avoid huge capital costs and develop a more robust decentralized network. Despite the visionary policy-making the implementation fell far short, with fluctuating rates, dissonance between the power authorities, substantial delays in connecting to the grid, and ambivalence on the part of the government. Despite these substantial setbacks and bureaucratic misfires, Ontario has achieved notable success. The province closed the last coal-fired plant in the province one year ahead of schedule. Ontario is the first province or

state to accomplish this feat in North America. The more remarkable as, in 2003 coal was used to produce 25% of the province's energy<sup>3</sup>. Moving forward, the 2013 Long Term Energy Plan will rely on conservation (a potential 16% reduction in demand), demand management (a 10% saving for peak demand periods), and developing up to 20,000 MW of renewable sources to account for half of the province's energy needs (Ministry of Energy 2014b).

While this report looks more generally at green economic opportunities in southwestern Ontario through the specific lens of green energy opportunities, it does so within the context of the Green Energy Act.

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<sup>3</sup> As of 2012, about 5% of Ontario electricity was generated by renewable sources (wind, solar and biofuel) while conservation accounted for 5% and natural gas for an additional 14% of electricity needs. (Ministry of Energy 2014a)

## Chapter Two

### Green energy initiatives: Economic Development and Municipal Officials

Nasim Adeli and Alison Blay-Palmer

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#### Key points

- ✓ Government policies at all levels are not harmonized and hence there is currently a lack of political leadership from the government that we are experiencing and a lack of trust in the government especially related to the green energy act. Therefore they all call for the three levels of the government to be hanging on hands.
- ✓ The FIT program was positive as a policy initiative but failed in its implementation. This is especially true since it took a long period of time for SMEs to get project approval.
- ✓ Regulatory impediments as well as Regulatory uncertainties seem to be the two major challenges that all point out to.
- ✓ Interviewees stressed that Ontario has low public awareness when it comes to environmental issues and especially the green economy. For this reason we should invest in educating not only the public but also the government on issues related to the green economy. This is especially true since the anti green energy groups have a very loud voice while those who truly understand the green economy have not been vocal at all. As such, people are hearing the loudest voices that point to negative issues. Therefore with providing real information to the public we can make them understand and provide opportunities for them to ask questions and learn and eventually act.

#### OVERVIEW

The results from this set of interviews include insights provided by economic development experts and municipal government officials. These interviews were conducted between June and October 2013. This section reports the results from those interviews. Officials represented departments across southwestern Ontario with two up to twenty employees. Of these, one to four staff were involved in various aspects of the green economy. In terms of gaps, key informants indicated that primarily knowledge gaps that dampen their ability to support green economic development (ED). Accordingly, education is needed to improve the knowledge base. As one ED official explained, “as they [ED

officers] are involved in green initiatives and become more familiar, then they will gain more knowledge, and expertise and better understanding of green initiatives and businesses they're [business community] looking for." There is also a need for all people across government to understand sustainability and the potential for greener municipal economic development. A better understanding of what market opportunities exist and how these can be captured would also be useful. As one interviewee indicated, getting this information is challenging though as budget cuts continue to squeeze their capacity to do research and gain this understanding. In other cases, departments are very small and lack the human resources to develop this capacity.

### Green Economic Drivers

There are several key factors that drive green economic development (Table 2.1). All of the category mean values fell between 4.7 and 6.0 out of 7.0. Government policy was deemed to be the more important factor. As one official indicated the draw of economic development created by government policy,

From an economic perspective those businesses coming into our area, they look at our infrastructure (more available buildings) and resources as well as the available workforce. They've been coming here based on the government programs (whether the government programs, whether the FIT projects). They've been coming here because provincial government is creating opportunities for them. And they're matching their infrastructure with their needs.

	Mean	n =
Financial incentives	5.8	12
Regulation/ government	6.0	12
Consumer demand	5.5	12
Marketplace competitive advantage	5.6	12
Corporate Stewardship	5.2	12
Catastrophes, environmental impact of operations	4.7	12
Public acceptance of products and public attitudes	5.5	12
<b>Table 2.1</b> – Important drivers of the green economy (Rated on a scale of 1 to 7 where 1 = low importance to 7 = high importance)		

Another key informant identified a bridge between government policy, public awareness and consumer acceptance. "The FIT program they will be scaled back. It was mainly to get



the industry going. In other words as people see others doing it will be more popular. As it becomes more common and accepted then it [green energy use] will increase and the others will reduce.” The importance of consumer education was also highlighted as,

Building consumer awareness and consumer demand, if you think of smoking 50 years ago, everybody smoked. Slowly we changed that attitude and minority of population smokes now. This is similar to anything green. It’s going to be difficult to get people to replace fossil fuels and reduce their dependence on fossil fuels, because in some cases it takes a bit more work. So you have to balance and make sure people know how they can contribute by using green building materials, automotive materials, investing solar at their home...

One interviewee commented on the need for more education as an opportunity for developing capacity for green economic development,

We need more education. Other countries are far more advanced in green energy than what Ontario is. We are just dipping our toe into the pond. And we need to continue to educate people. If you go to certain countries and you want to put a building at a certain size, solar would be required to have your building permit. That’s not the case in Ontario. If you travel to different countries in Europe, you see green energy has been adapted as part of a way of life, it’s not new to them, they’ve been doing it for years whereas in Ontario its very new and I don’t think we’ve done a great job in educating people. That’s what we have the divide of pro and anti green as far as energy is concerned anyways. So I think if we continue to educate people and to provide real information that will help them make informed decisions then the future would be better.

This is particularly important for, as one key informant remarked, “...if I look at it from a business standpoint, if I’m making something in Canada, versus Vietnam, Singapore, we have very low competitive advantage here intrinsically.” Financial incentives were raised as making a location more or less attractive to investment. While it was observed that companies need to provide the initial capital, it was suggested that if there are financial incentives in place, companies would be more likely to adopt green initiatives.

## Local assets and growing the green economy

Several key informants underscored the central, facilitative role of government and the way it can facilitate or hinder green economic activity,

We have a number of projects and companies who are in renewable energy space. There have a few delays with the provincial government in getting some of the projects off the ground, so I would just indicate one of the areas that inhibit the growth of renewable sector. When we don't have a full commitment from the higher level of the government its hard to implement projects from the city and the businesses. There are a lot of roadblocks and a barrier that is appears.

Uncertainty can lead to reduced investment. For example, "Businesses coming looking for facilities. They don't know how long these opportunities [fore green ED] are going to be around for and so they're not going to build a facility until they know they have a long-term window". It also impacts demand

The demand for more energy efficient product is still little bit modest. Some people will but most people will not. I do see that at the provincial level. If the provincial government backs off on its commitment to the green energy, then that could be a real problem. At least one of the opposing parties is threatening to repeal the green energy act in the programs that it supports. So that's a political risk.

As another ED expert explained, there is also as connection between policy, program implementation and political cycles and the effect this has on green economic development,

The FIT program was a challenge from an administer point of view. The province made the FIT program way more frustrating, way too complex. So it's unfortunate. The German have done a better job in administrating their FIT, but it has had an effect. Hopefully it will get that sorted out. Hopefully the province will continue to implement it and I'm a little bit worried what happens if it does not. What happens if we get a change of government. That's the biggest risk here now.

It all comes down to the community whether they want to adapt green energy or not. Being forced is why the green energy act has failed. There is also the need for business leadership, "..there needs to be people invest into it [green energy projects], often it's the business community that leads by example. You need them to demonstrate to the others that they're

willing to invest in these sort of initiatives.” Specifically, Sustainable Waterloo was cited as an example of positive, incremental change. City planning also offers future opportunities to seed new ED. Guelph is an example of this as it has developed a Community Energy Plan in concert with community partners.

	Mean value
Land	5.0
Financial Resources	5.6
Human resources/Skills	5.2
Political leadership	6.1
Business leadership	6.9
R&D Capacity	4.7
Local demand for green product/services	5.4
<b>Table 2.2 – Importance of local assets for growing the green economy (Scale of 1 to 7 where 1 = not important and 7 = very important)</b>	

There is now a related research park where alternative energy sources are being explored. As one key informant observed,

Local planning should be added as a local asset...one of the reasons why the Green Energy Act is getting such negative view, because government went in and said we’re going to take away all the local authority to make decisions and we’re going to create a Green Energy Act that would supersede local planning. By doing that, what you did was that you raised questions among the citizens, why are they taking away the local planning..Then all the sudden people started to think it is bad because the government doesn’t want me to have an opinion. So having local control that I think is very important.

Several key informants pointed to colleges and universities as community assets for developing the sector. On the training side, they are recognized as supporting skill development. That said, one interviewee remarked on the lack of skilled labour and the need for increased formal education to fill the gap. Another person observed there are opportunities for associations, such as LEED Canada and the Chambers of Commerce, to be more engaged through outreach and seminars as a way to train ED experts and business leaders in the benefits of different green options. ED officials themselves can also provide training and leadership in this sector. Universities also have a role to play in developing or helping to develop new technologies and processes,

University of Guelph has a strong research base, such as the bio product and discovery center, they also have environmental engineering and science programs. They have partnered with the city and industry on some renewable energy projects. We also have number of renewable energy firms in Guelph, Canadian solar being one of the largest.

### **Economic development initiatives: Successes and lessons learned**

Municipal and county departments have initiated and adopted several strategies to advance the green economy including demonstration projects, new infrastructure (e.g. hybrid buses), facilitating low carbon green building in industrial and business parks, implementing green municipal waste management programs and public education.

From the green building perspective, one community adopted an innovative, holistic project approach for a 110-acre industrial park. As a first step, they held a design workshop to discuss various green features that included officials from the region, the conservation authority and business. Some of the features include: streets oriented to maximize solar for buildings; on-site storm water filtration to improve the water cycle; natural sites including wetlands and wildlife corridors to preserve and maintain and protect existing ecosystems; the natural features are connected to walking and cycling trails; incorporation of a mobility, bus stop shelter area; transit within walking distance of all buildings; and, to strongly encourage new builds to aim for high green standards. Another example of green building is a newly-built city hall that includes recycled water, a green wall, energy efficient windows and a green roof. Urban planning can be leveraged to bring about significant change,

...in 2004, we shifted our economic development strategy completely from building and selling Greenfield and industrial lands in suburbs and building a knowledge economy in the center of city in a medium to high-density city. So in that period of time since then, we have seen a fundamental shift from the way the city has been evolving. The re-urbanization of the center of the city is probably the most important environmental thing that we could have done. The result is that the center of the city is the fastest growing component of the city. Both in terms of population and employment. It's completely supportive of transportation modes...So in economic

development, our emphasis is building high value creative clusters in a re-urbanization context.

Examples of development include: a life sciences complex and new build condominiums as well as renovating existing industrial stock for residential purposes. Other communities have also focused on community-wide initiatives. For example, Guelph was the first municipality in North America to have three-stream city-wide residential waste management programme. A second city is exploring ways to enhance waste water treatment enhanced directly through improved infrastructure and indirectly using improved agricultural management strategies. Increasing local food consumption through land based agriculture and greenhouses were also provided as strategies to reduce carbon flows. In some cases, incentives are used to encourage green development,

Our city allows bonusing for LEED certified projects. So that's one component to receive high-density development. So the city regulates how much building system you can have in a property. You may be able to get 20 to 30 percent units if you incorporate community benefits and is sustainable buildings.

Another city has engaged in a 'Smart City' initiative and is exploring five pillars for future development, including,

Knowledge base workforce, broadband and innovation (Google it)(five pillars) and each year (this is a world wide initiative), when they're ranking, one of its pillars is arts and culture something that we will promote when we do our application.

In some municipalities, outreach is used to support and inform about existing and emerging green alternative energy and renewable products. These initiatives include: public consultation and education about existing technologies; centres of excellence for research and education; conferences; round tables. These initiatives have involved a range of stakeholders from green business, automotive, healthcare, industry associations, labour unions and government and can provide a vehicle for collective action and policy-input. These forums also allow ED experts to stay informed about innovations, policies and programs.

One key informant put forward the importance of being supportive of new opportunities,

Companies like to be involved in communities that are receptive to their product. So there are many communities that said, we would like to get wind

turbine blade factory into our community. Then all of a sudden you see people saying we don't want wind. The community is against what the product is being used for. So we have been wide open. By the end of next year we would have over 500 wind turbines in our community and we have some of the largest firms around. So we have adapted green energy and we have promoted ourselves as such. You can't ask someone to come and invest in your community if you cannot support incentive in your community. Attracting companies to set up shops here.

Key informants were asked to provide examples of best practice in their communities. In addition to green buildings and related development sites as mentioned previously, specific projects include: increased tree planting; tipping fees to help reduce waste; composting organic waste; recycling programs; LED lighting in government facilities; solar roofs; and, capturing waste heat for greenhouses.

Key informants were also asked to comment on barriers to adoption. These can be grouped as financial as well as policy and program stability and the need for improved coordination between various power authorities. The constrained financial resource base for municipalities means that they have very limited dollars to help stimulate or support green economic development. On the policy side, the Green Energy Act was characterized in several ways depending on how a municipality or region leveraged the associated FIT program. In some cases, it was seen as stimulating business and providing a positive basis for future growth. In other cases, the uncertainty and difficulties connecting to the grid resulted in businesses closing or leaving communities. As one interviewee explained, there can be too many,

...uncertainties because whenever they bring in a program, we see people looking at more business opportunities, the solar farms, or places to put a wind farm or to produce products that support those types of initiatives. But they're only going to be involved in that if they are going to make money selling back energy into the grid. So if the government changes its policy or price scheme on that, then there will not be any interests in their favor.

Tensions between Hydro One, the provincial government and the Ministry of Energy exacerbated the uncertainty. With the exception of the Light Rail Train (LRT), it was noted that the federal government has done very little to support green energy initiatives. As one

key informant indicated, “The support of government at all levels is necessary in order to be successful” so only having the province engaged is problematic. The local scale is constrained by, among other things, the transmission capacity, where there are

Infrastructure limitations as well. Especially locally. The transmission capacity is restricted in this area. So it’s difficult to get renewable energy projects connected to the grid and the delays in that are very challenging.

Other interviewees pointed to the constrained capacity at the local government level, as one person put it, there is a, “lack of municipal control”.

Finally, key informants were asked to share any lessons learned from their efforts to promote a green economy. As many of the projects are breaking new ground, inevitably, some run into difficulties due to unforeseen challenges. In one case, there were structural issues for a new building project that required an expensive site overhaul. Supply chain problems can also present difficulties as new material sources need to be developed and delivered. In these instances, it is important to ensure that capacity exists to support upstream demand. In other cases, initiatives are more successful than expected, for example bike usage that outstrips availability of bicycle racks in core urban areas. Legacy problems also pose problems as when good ideas are poorly implemented, making it difficult to foster similar opportunities in the future. One example of this problem was a district energy plan from over a decade ago that resulted in environmental degradation. As a result this strategy is approached with caution for future projects despite its merits and potential.

## **Partnerships**

The green economy, as with other innovation-based sectors, calls for inter-connections and partnerships to succeed. Key informants identified existing and potential connections during their interviews. One existing example is Sustainable Waterloo. This organization has as its mandate to support a network of companies to implement sustainability. As one interviewee remarked a comprehensive, holistic approach is required to address environmental challenges as well as develop green ED opportunities and get products and processes to market,

It should be multi faceted group of individuals that come from both from the academia standpoint, research, and industry. All levels of government need to come together to solve problems and figure out further opportunities and create a unified strategy to move forward. How to develop skills and talent that is needed to lead a green economy as well as more support on research and development, what are those technologies and how can we cherry pick those strategies that will give our region competitive advantage. Industry needs to be at the table. They need to be implementing R&D and hire individuals from college or universities.

Possible partners mentioned by other key informants include NGOs, educational institutions (e.g. Centre for Groundwater Research at the University of Waterloo, schools of architecture and planning, WLU School of Business) and Chambers of Commerce. Municipal officials can act as intermediaries and connectors between industry groups, economic development, investors and companies. Several people made the point it is necessary for all levels of government to sit at the table as they each have specific roles and functions to fill. There is also merit in including as many people as possible in the planning stages,

We need to engage more industry associations so perhaps construction of industry associations, engineering, manufacturing, agriculture need to be engaged. So when policies are being set up, at least they're listening and they have a voice to be able to say what's happening.

The need to engage across sectors is also key so that agriculture, manufacturing, water and energy management, building, waste management.

## **Future opportunities**

Key informants were asked several questions about the future prospects for a green economy as a way to gauge opportunities and barriers to change. The first question addressed potential gains for their cities and/or regions. A common theme was the need for a vision to guide progress. Some goals raised would be to add more green jobs and more green industries as a way to gain a competitive advantage in the market place. In this context, it was noted by several interviewees that this is difficult to influence solely from the municipal level and requires drive from the community as well as a, "...combination of partnerships with industry, academia municipal government, not-for-profits and industry



specialists.” As with any type of local economic development, community needs and assets are unique, so developing a one-size fits all solution is not feasible. As a result, communities raised a range of opportunities. The creation of jobs, related taxes and income generated from businesses, construction and the on-going presence of industry are benefits all communities aim to capture. The development of highly qualified people through training was also mentioned so that, “...development, marketing and promotion and training of staff. Keeping staff informed, increase their knowledge. Municipalities should have more training in this area.”

It also makes sense to identify, foster and build on local assets to create synergies. For example, in London, wind engineering and water management captures strengths at the University of Western Ontario. Some regions have emerged as international leaders (e.g. Waterloo for environmental remediation) in niche areas. This competitive advantage offers leverage to develop related expertise. Another suggestion to stimulate future development was to give preferential status to local green businesses for public procurement contracts even if it meant paying a slightly higher price for the product or service, as “the gains would be additional investment and future employment, as well as engagement with our educational facilities to develop and support skills required for this growing industry.”

Governments are key to moving the green agenda forward and can help give it momentum. There was consensus about the need for political leadership and financial support but there was also recognition that local communities are best to determine how money should be spent. Ideally, there would be a, “...unified vision, and having policy that would support green economy initiatives by creating unified strategy.” As one key informant put it, “They [the governments] need to get it together. They need to be forward looking. In 4-year period no one is looking long term. They’re looking at the next election. Another key informant provided insights into how this could work,

Clearly when you talk about policy development, it is more a provincial responsibility. Nationally we should be looking at adapting some of the Kyoto Accord and make sure nationally we meet the targets that are set globally and play our part. From there, the provinces should be mandated to carry that out and should be carried into policies.

Maybe there should be some funding going directly to municipalities and even ED entities to focus on building the green economy. Doing some direct work around there. Right now there is some, through the FCM. Our city has taken advantage of the green municipal fund. We have implemented a number of sustainability features in our buildings, solar panels on buildings, smart infrastructure programs are in place where they have used what IBM has software, help to track infrastructure, so we can be more proactive and make sure to sustain it, making sure we're not wasting.

Our new city hall that was build in 2009 is a LEED gold building. So we're leading by example. Whenever there is a new activity, now the city looks at the decisions from a sustainability point of view. All the direction that we take in the future will have to meet some kind of guidelines. Balancing the economy, environment and social.

There is room at the table for multiple departments including management and planning, and citizens. As one key informant underlined collaboration between and within levels of government is required, "In my view there needs to be more interaction between these levels of government in terms of information sharing and more even playing field so the municipalities have a voice". Several key informants discussed the potential for and the opportunities for change at each level of government. For example, one interviewee explained,

The municipal government already has quite a lot of power influencing the shape of the city. What they lack in some respect is the financial capacity to deal with it particularly with the renewal of the infrastructure. Because the renewal of capital infrastructure is really expensive and they have the property tax that is probably not the best way to finance that infrastructure. The province and the feds have agreed to convey the gas tax, a portion of a gas tax to the government indefinitely and I think that's positive but financing infrastructure using a 1% decrease in HST might be another way of making sure we can have the capacity to renew our infrastructure in a way that supports increased sustainability.

Another key informant described the opportunities as,

...it is important to think about infrastructure, the structure of the city, the allocation of land, the questions of building form, the questions of

transportation infrastructure and in that equation, the means of producing energy is only one.

For us the big chunk of environmental strategy and our economic development program would be adaptive reuse of old industrial properties in the downtown. So we have enormous amount of contaminated land in the downtown, so legacy from early state industrialization and we put in place a whole new set of programs to bring that land into action. And all that land is within the center of the city. It's all previously serviced, it can support medium to high-density re-urbanization. Thinking about building a sustainable economy is using a comprehensive approach to shaping our city.

It is by capitalizing on local opportunities that green economic development seems to take hold.

There is also an opportunity for government to lead by example, "if Schools, hospitals, allow using renewable energy as a source for themselves, people would be much interested in that." Public education was put forward as part of the future viability for green initiatives, "School educates students to green issues. Because these kids are adults of tomorrow." As policy and programs evolve, it is critical that there be as much inclusion as possible so that everyone has contributed to and feels ownership for green economy initiatives. Program monitoring and evaluation is also key to assess progress, make adjustments, and share successes and failures all as learning opportunities. Key informants also shared specific goals and related projects that they would like to see addressed, including: an integrated, efficient transit system in high population corridors; long-term commitment to energy policy to provide stability to the industry; improving the power grid and associated connectivity; streamlining the approval process for FIT programs; smart meters; and developing policies and programs around green buildings and green roofs.

Experts interviewed were also asked to identify barriers to a greener economy. A key challenge raised is a lack of public understanding and uptake of green technologies and services. As one person observed,

The price is too high compared to "non-green" - people will buy what they can afford and attitudes are rarely changed by extolling the future value of investing now - it has to make sense right now to today's consumer and

become culturally part of our lives in many ways. There is a great deal of misinformation and contradictory messages in the public space.

Another interviewee observed,

Part of the problem we have is the willingness for the public to want the green energy and the Canadians perceive themselves as being very clean and vanguards of clean tech, but we're really not. People don't want to pay the high prices.

One way to address these issues would be to provide a clearer picture through full cost accounting as, "The cost benefit analysis is the main barrier. Convincing consumers and businesses that is worthwhile and beneficial economically that's the primarily one." There could also be merit in that includes externalized costs of fossil fuel use such as increased health costs, climate change effects and environmental damage. As one expert explained,

Environmental issues and catastrophic events will continue to be a big financial burden. I'm saying that from a capacity building perspective and economic perspective. When bridges are failing or infrastructure ...these require continuous investment and more greater efficiencies. We have to do more.

The thinking is if these costs were more widely available it would provide a clearer picture for consumers and both policy-makers.

There were several elements that were identified as being key to achieving a green economic development for SMEs. Many fall under the heading of operational benefits for the businesses themselves. Reductions in energy and resource usage should be incorporated into business planning. It would be more transparent if there were metrics in place to evaluate carbon footprint and other environmental impacts. It is key that businesses realize that there are operational savings that can accrue from adopting green technologies. Conservation was also noted as an important dimension of greening moving forward for both businesses and the public. Others pointed to the green economy as offering new opportunities for existing 'traditional' businesses such as the automotive industry.

In terms of future opportunities, several possibilities were raised. On the more technical side, one key informant pointed to the need for improved energy storage technologies as being a hurdle to moving forward. Using waste, agricultural, landfill and other, offers energy inputs as systems become increasingly closed loop.

And patience is needed. As one expert interviewee observed,

The pace of change is gradual...Our city is now engaged in fundamental transformation but it happens quite slowly relative to our personal lives. And so it's difficult for people to see. From a public policy view that's a challenge. Because cities evolve over such an extended time. The public can lose patience with it. Our expectations for change, for example for building a sustainable economy can easily be mismatch with what practically possible.

This call for realistic planning and accommodations is important so that neither business nor the public are disappointed by the pace and scale of change.

The next chapter reports findings from interviews with owners of Small and Medium-sized Enterprises in southwestern Ontario.

## Chapter Three

### Green energy initiatives: Small and Medium Sized Enterprises

Mike Nagy and Alison Blay-Palmer

#### Key points:

- ✓ There was a consensus amongst key informants that financial incentives for the green energy sector are fundamental, as without profitability, the industry will not survive. That said, any approach to support the green energy sector needs to adopt a whole business perspective.
- ✓ Supportive, stable, long-term government policies are needed to stabilize the industry.
- ✓ There is a lot of public misunderstanding and misperception about green energy options that points to the opportunity for government leadership in educating the public. Good stories are needed to help the public understand the potential benefits of this industry.
- ✓ Regulator impediments are a key issue. Regulations need to be in place but they need to be reasonable and streamlined.
- ✓ Academia is viewed as an important partner.
- ✓ Social inclusion is desirable but highly inconsistent for this sector and perhaps contributes to misperceptions by the public about green energy.
- ✓ While there is some need for more skilled trades the industry has more or less fixed this on their own. One area that did emerge as being the exception is in the area of instrumentation and computer technology skills to help specifically with green energy projects.
- ✓ Lack of level playing field as fossil fuel energy gets financial and regulatory support but small green does not especially when viewed from the perspective of scale.

#### Overview

A total of 14 interviews were conducted with the heads of green energy small and medium sized enterprises (SMEs) in southwestern Ontario. The companies employed from 2 – 550 people (mean = 60 employees) with eleven of the companies employing less than ten people. The businesses included new ways to produce energy efficiencies through green technology (e.g. solar, small scale hydro, biogas), improved energy and water management

and energy efficient building. All but one of the companies interviewed incorporated green technologies and principles into their on-going operations as a way to reduce operating costs, demonstrate projects in operation and more generally “because it is the right thing to do” (Business owner, Interview April 2014). These initiatives include green manufacturing processes and buildings, energy reduction through waste diversion and the use of green energy technologies.

### **The green economy: State of affairs**

As indicated in Table 1, the most important local factors (a score of 5.3/7 or higher) for growing the green economy are: improved financial resources; business leadership; local demand for green energy products and services; and, continued human resources support and targeted skills development. These factors are elaborated below from a local perspective and also beyond as appropriate.

With respect to existing employment and future opportunities, all but one interviewee indicated that 100% of their employees work in the green economy. When asked about hiring personnel for green jobs, business owners indicated that skilled professionals, particularly on the science and engineering side, were available. In some cases, primarily with respect to construction and equipment installation, while no one indicated there was a serious shortage of workers, steady growth of “green collar workers” is needed. Several key informants expressed the need for more people able to manage green businesses and provide support (e.g. legal contracts, computer controls and electronics both technical and sales support, site engineering and green construction expertise). There was also consensus that skills were transferable from traditional industries (e.g. automotive) to green energy businesses. Given the changing nature of technology, part of the innovation milieu requires technical workers who can problem-solve and adapt as the technology evolves.

Community is important both as a starting point for scaling up energy projects and also as a possible source of investment. As one key informant noted,

Local resilience and having a community meet its energy needs locally is a key part of creating local investment, housing stock, future generations, empower people with their energy interests.

	Mean	n =
<b>a. Local business assets important to grow the green economy</b>		
Financial	5.8	12
Business leadership	5.8	12
Local demand for green product/services	5.6	12
Human resources skills and development	5.3	12
Political leadership	4.4	12
R&D Capacity	4	12
<b>b. Factors external to the local business environment that challenge green economic growth</b>		
Lack of investment capital	3.3	12
Federal policy	4.2	12
Provincial policy	5.9	12
Local policy	3.2	12
Underdeveloped supply chains	3.3	12
Regulatory uncertainty	5.3	12
Inaccurate perceptions of state renewable capacity	4.5	11
Regulatory impediments	6	12
Lack of sources	2.8	9
Workforce and skilled workers	2.3	12
Lack of public understanding	4.9	12
Lack of political leaders	4.5	11
Tensions among stakeholders	4.3	11
<b>Table 1</b> – a. Local business assets important to grow the green economy and b. key factors external to the local business environment that challenge green economic development (Rated on a scale of 1 to 7 where 1 = low importance to 7 = high importance)		

Some key informants also pointed to the need for more supportive local elected and bureaucratic officials. Some key informants encountered either a lack of support or resistance at the municipal scale as they have tried to develop their businesses. The emergence of local manufacturers has provided assistance in several ways. First, it has helped to develop better local supply chains as well as increase the number of options available for sale. This in turn helps with sales as there are more choices for consumers. As one key informant explained, at the outset there, “...was not much choice. Old Ford adage, ‘You can have any colour you want, as long as it’s black.’” This is changing as parts of the



alternative energy industry develop and mature. In terms of R&D, five of the companies interviewed indicated they engage(d) in this level of product development as part of their business planning process. These companies also indicated that the R&D is undertaken in conjunction with outside businesses. One key informant noted the need for a more streamlined process as a way to improve the innovation culture,

Some way to move forward and get access to resources for new projects, getting through the regulatory hurdles. Having guidance on how to address regulatory issues with these projects. Coaches and guidance ie: electrical engineers working with us to help. Lack of innovation culture. More afraid of the lights going out so they stick with what they know.

In response to questions about local-based industry initiatives to advance the green economy, answers were divided into five categories (Table 2). While there is some overlap between the categories, it is worth noting each category to ensure a thorough review of primary points. Targeted manufacturing, off-the-grid initiatives and carbon neutral projects were cited as examples of low carbon initiatives. Recycling, reducing energy requirements through both the application of new technology and conservation were provided as examples of increased resource efficiency. Instances of social inclusion are community co-operatives, the active participation in and support for social groups, and the inclusion of communities in lower impact community-scale energy projects that were described as being similar to “a community barn-raising”. Pollution and emissions reductions include increased green installations that displace fossil fuel energy sources, substituting labour for chemical and energy intensive services and landfill diversion. The lone example that has a direct impact on biodiversity preservation is the use of wind energy in that there are substantially fewer bird kills. One key informant explained that for every bird killed by a wind turbine, 25 are killed by cars and 350-400 by cats<sup>4</sup>.

Low carbon	Increase	Social inclusion	Pollution and	Biodiversity
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<sup>4</sup> This is substantiated by the US Fish and Wildlife Services that estimated that while wind farms killed approximately 573,000 birds in 2012. By way of comparison, in 2002 communication towers killed 4- 5 million birds, cars killed roughly 60 million, cats hundreds of millions and almost 1 billion were killed flying into windows (Doom, 2013, <http://www.bloomberg.com/news/2013-12-06/u-s-eases-turbine-bird-death-rule-as-cats-kill-millions.html>)

initiatives	efficiency of resource use		emissions reduction	loss prevention
Targeted manufacturing processes Off grid initiatives Carbon neutral projects	Recycling Energy needs reductions through conservation and new technology Use less and fewer energy intensive resources (fossil fuel, fertilizers)	Community co-operatives Actively participate in community social groups Include community in lower impact community-scale energy projects	Through increased green installations Substitute labour for chemical and energy intensive activities Landfill diversion	Wind very non-invasive for birds compared to e.g. cars, cats and buildings

Table 2: Industry led initiatives to advance the green economy

In addition to local considerations, Table 1 also captures the assets and resources key informants indicated were needed from outside the local community to develop green economic activity. The most important factors for consideration (4.5/7 or higher) are: regulatory impediments and uncertainty; federal and provincial policy; lack of public understanding; and, the need for political leadership. In the policy context, several key informants pointed to the lack of support for alternative energy through federal policies or programs. One key informant indicated that this compromised the future innovative capacity of the country. At the provincial scale, one key informant raised the point that the Ontario Green Energy Act takes control out of local hands. That said, Guelph has developed a progressive Green Energy plan that is garnering international attention. The need for clarity within and between jurisdictions and departments was mentioned as important to growing the industry.

On the financial side, one interviewee commented on the high employer taxes as an impediment to business development and the hiring of more employees. Accessing financing for companies engaged in alternative energy can also be challenging. Clients looking to install alternative energy projects can also face barriers in trying to access financing. One key informant stated, “Banks could be helpful. TD has home improvement loans and used to have Green loans for hot water systems. Similar loans would be helpful that emphasize green.” Overall, key informants expressed their frustration about the need for a more supportive approach to green economic activity. As one person observed, “Too much negative editorializing about solar and wind. So not having positive stories about solar and wind.”

Some notable trends as possible best practices remarked on by interviewees include the publication of manufacturing processes through the ISO programme and the goal of low carbon. Associating corporate travel with low carbon was seen as a positive. Interest in energy reduction for both homes and businesses seems to be growing. One key informant noted that best practices tend to take root locally, and that there is a, “Need to have an eye for scale” as a way to spread local accomplishments. Energy saving programs (e.g. LEEDs, Solar Ready, Net Zero, Energy Star) were cited as helping increase energy reduction and increase the efficiency of resource use.

### **Partnerships**

As with many vibrant industries, the Green Economy demands innovative inter-connections and partnerships (Lundvall and Johnsson 1990). To measure the relevance of this aspect of innovation, key informants were asked to identify current partners who advance green economy initiatives. While the responses are consistent with other observations about finance, R&D and supply chains for example, the partnership dimension added a layer of complexity that is valuable to report separately. One interviewee pointed to the importance of financial partners who work with industrial and commercial branches of the industry. Trade unions were identified as potential networks that could help create connections and act as links and provide a communication forum for the industry. Groups that need to be included into a network include safety associations, various levels of government, utility companies and suppliers among others. An important function of these partnerships could be to go outside the sector and learn from other sectors that are successful and marketing to the public. One key informant observed that there is the need for supply chain stability so the “industry is not teetering, can plan and move ahead.” This person indicated that, “OMAFRA has been working with biogas for 15 years and have done a pretty good job”. Academic alliances that foster connections were also offered as having significance in that, “...the interaction between universities and industry ...to keep the knowledge here. Critically important to stay ahead.” Partnerships at the international scale (e.g. between Ontario and Germany) were cited as possible means to develop international supply chains. The need for green business mentors was also suggested. Key informants were also asked to identify any potential future and their roles. Among the suggestions were links to technical experts working in energy generators, semi-conductors, as well as those working

in natural gas to develop greener methods of producing natural gas. Improved linkages with municipal government, Boards of Trade, community groups (e.g. Transition Town in Guelph and Kitchener-Waterloo) and the Ministry of the Environment were mentioned specifically. One interviewee suggested municipalities could use their purchasing power to set an example. Someone else remarked that feedback to customers about, “monitoring their usage could help stabilize [grid power] loads” could be facilitated through improved cooperation between municipal governments and power authorities.

### **Lessons learned**

Key informants were asked to give examples of initiatives that were less than successful and to describe what they learned from the experience. In one case, an entrepreneur talked about working on a rainwater harvesting initiative with a local university but once the technical issues were resolved, “the authorities changed the regulations to make it illegal to use rainwater for anything other than irrigation and toilet flushing.” Other key informants indicated having invested in technologies that became obsolete or were priced out of the market due to subsidies for other types of energy (e.g. natural gas). In these cases, the issue of permitting and “red tape” were also factors.

Issues of scale were also raised. The questions here centred largely on whether scale-appropriate installations were available or not. This related primarily to available technology as well as supply chain, inventory control and infrastructure challenges. In one case, technological incompatibility was a factor. Many of the key informants interviewed were early adopters in the local market. In one case, the key informant indicated that, his company, “...was leading the supply chain too much and took the risk for industry. Did the homework and big companies got the benefit, we paved the way.”

### **Existing and future opportunities**

Key informants were asked about the primary elements needed to achieve a robust green energy economy. Responses coalesced around a few key ideas. Multi-scale, coordinated, long-term government planning and support through policy and incentives was seen as critical. Leadership was seen as a key determinant. As one interviewee stated, the Ontario government,

...made some mistakes and got some criticism but [they] had some vision and took a risk ie: solar. I give [them] a lot of a credit. Every initiative is not 100% right. We need people like that who will take lead on initiatives. Government incentives work. Brings economic development.

Other support is now needed in addition to the foundation laid by The Province. On-going government strategy needs to include conservation and resource management authorities as well as all levels of government. As one key informant stated,

There is a need for long-term energy planning at a provincial level, for 20 years cycles for business. The other is from an energy sector for long-term. So one is for business one is for the grid itself, 20-50 year planning.

It is important to ensure adequate supply into the future,

Government policy and initiatives need to pursue green energy. Cheap energy will not last forever. The next 100 years will be exciting with all the new ideas come forward. There are smart people coming forward. They will leapfrog over us.

With respect to the potential role of municipalities, one key informant observed, "The gains might be future oriented. Things that will reduce operations cost of the City would benefit all citizens." Another person pointed out that, it is,

[s]imple, 'local in mind' in terms in energy. Look at how much money people spend on energy etc. coming from somewhere else. If we took the 100s of millions of dollars and put locally, huge gains could be made.

Another interviewee observed that there is substantial potential at the municipal level, ...manufacturing jobs, increased economic activity...diversification of the energy supply and therefore reducing risk. On the human side, understanding your neighbours and community when successful community energy projects are launched.

Increased efficiency opportunities were also noted by several people as being important to grow the industry into the future. For example, one person pointed out that by adopting, "Closed loop systems. You prevent hauling of waste. Use the energy locally. Less long transmission loss from Bruce Nuclear. Keep waste in the region, reduce carbon footprint." One interviewee cautioned the need to be forward looking and not privilege large

businesses over SMEs, as the “...subsidy of large users of powers is not good. Misrep on rates structure. Leads to an outmoded grid, leads to risk. No resilience in the grid and infrastructure. Don’t play politics with the grid.”

It is also necessary to streamline the administrative process by removing barriers including inappropriate building codes and developing a simplified application system, specifically making the process easier when applying to the OPA for a FIT or MicroFIT contract. This process is currently arduous and not timely. As several interviewees indicated there is a pressing need to streamline some of the regulations from authority to authority, eliminate duplication and harmonize processes. There is also the need to provide appropriate infrastructure and modernize the grid where needed so that connecting to the grid is simplified.

When asked about the best way to support the emerging green economy, interviewees also indicated that telling the story is important as a way to educate the public about the environmental and economic benefits of green energy including life cycle analysis that provides a cost-benefit analysis for wind, solar, hydro (small-scale and large) and compares this to existing options including nuclear and coal so that there is a, “...focus on education because misinformation can influence poor political decisions. Talk in terms of complementing the energy supply.” As one key informant observed, the government through its various departments including health and environment has the “Responsibility to educate the public truthfully rather than politically... just talk science.” One person suggested consumers need to experience the benefits of the technology through venues such as conferences and demonstration projects.

From a technical point of view, one key informant indicated that there is a need for improved resources management, so for example, we would improve opportunities to turn waste into energy. This could be supported through legislation that would, for example, ban the landfilling of organic waste. While some sectors are coming into their own with respect to profitability (e.g. solar), others could benefit from government support or by levelling the playing field through carbon taxes. Several key informants saw locally-scaled energy production-consumption loops as key to the resilience of the energy supply chain and to address transportation and resource management challenges.

When asked about the next five years respondents said that they did not anticipate any ground breaking changes but rather decreased costs, increasingly dispersed generation and distribution as well as improvements to existing technologies. Several entrepreneurs discussed the need for financial support and recognition of the sector as a way to level the playing with other companies in the energy sector, including oil and gas. Suggestions included: green procurement policies across all levels of government; changes to the tax structure to reduce the burden on labour input for employers; and, increased taxes on unsustainable resource inputs. One interviewee underscored the need for improved funding mechanisms, such as through Ontario Bond rates and appropriate write-offs to make green energy projects more competitive. Others suggested Ontario Bonds and developing businesses using a co-operative model through support for community engagement and ownership.

The City of London provides an interesting funding model for projects where they pay the costs up front for solar hot water and the customer pays the city for its use. This could be a funding model for other consumer based green energy initiatives. One key informant adopted a different approach to this challenge, indicating that, the government,

...should deploy policy in concert with supporting the industry not in establishing market value. In other words, business should establish whether it can make money or not, the government should not determine this. Would not want subsidies for any power including traditional.

Another key informant pointed to projects outside of Canada as possible models,

I believe that most western EU countries by 2018 that all new low rise residential construction but be a passive design, ie: net energy neutral users. If we were to do that then this would boost green energy producers and jobs.... Ie: houses have to produce energy....

## Chapter 4

### SUMMING UP

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There are important lessons from the implementation of green economy initiatives in Ontario. First, having the vision to develop progressive policy is not enough. The follow through based on integrated and streamlined implementation is key. That said though, between the research and writing of the report on renewable energy in eastern Ontario (2012) and this report, people were able to see beyond the administrative details and most could comment on the vision of moving Ontario into a new energy era. This is attested to as Ontario is now the only province/state in North America to give up coal-fired plants.

That said, a few summative comments are possible. It is apparent that those who participated in green energy initiatives, whether it is from a one-time project to multiple projects, learn very quickly that developing green energy has not been easy. This reality is due to the lack of general assistance provided by the regulating and inspecting bodies combined with strong public misperceptions primarily due to lack of education and inclusion. In terms of the Green Energy Act, SMEs working in the renewable energy sector saw the provincial government providing the policy leadership, but falling down on the program and implementation side.

As stated by one key informant, "...humans are programmed to defend the status quo" regardless of whether the status quo is positive or not. Government bodies could help lower this barrier by educating the public on the real benefits of such projects. This in turn would inspire more investment once the general public was accepting and or supportive of green energy projects. With more than 70% of the ED interviewees indicating that Ontarians have a low awareness and attitudes regarding environmental issues and especially the green economy, investment into public education is imperative to inform and develop demand for renewables. Providing factual information to the public can help them understand



the benefits connected to green economic development and provide opportunities for them to ask questions, learn and eventually act.

Profitability is central to any industry and green economic development is not exception. It is evident that if there is no profit to be made there is little incentive for green energy projects. Full cost accounting as a way to level the playing field across industries and help educate the public would be extremely useful in addressing the challenges experienced by renewable energy companies. Additionally, without a consistent, transparent and predictable state regulatory environment as it pertains to green energy, there will equally be an inconsistent and uncertain investment into it. Government policies at all levels need to be harmonized. Green energy is the wave of the future (OECD 2011, 2012, 2013) and keeping Canada locked into a fossil fuel based economy is compromising future innovative capacity and economic vitality.

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