



Ready to grow

Making Ontario's environment
industry a world leader at
home and abroad

A report by Deloitte for the Ontario Environment
Industry Association (ONEIA)

April 29, 2009

Executive summary

A real opportunity for growth

Ontario's environment industry has a significant opportunity to increase revenue, overall employment and global market share in the next few years. Economies across the developed and developing world are entering a new stage of development that will be defined in part by "green growth" – a transition that will be led by environmental services, product and technology companies. Estimates put this growing world market at almost \$700 billion annually. A significant base of innovative companies, world-class professionals and supportive governments have been making efforts to position the industry to achieve a critical mass at home that could allow it to successfully compete with jurisdictions around the world. Yet despite these factors, this report finds significant concern that Ontario will not be able to capitalize on these advantages unless business and governments find new ways of working together to develop appropriate incentives, focused public policy and focused regulation.

As they observe other countries moving to take advantage of these opportunities, Ontario environment industry firms offer praise for some of the steps that their own governments have begun to take. By continuing the process with more aggressive action in the short term, Ontario may be able to play a leading role in this exciting industry.

A report based on feedback from Ontario's environment businesses

This report assesses the environment industry in Ontario based on direct input from businesses across the province. It identifies five core priorities and many related ideas that will help Ontario build a leadership position in the sustainable economy of the future.

The report focuses on what industry practitioners view as the barriers that result in slower growth in the sector. To identify these barriers, senior executives from across the environment industry were interviewed

and subsequent focus groups were held in Ontario's major business centres. The insights gained from the interviews and focus groups were used to develop an online questionnaire that was completed by 180 business managers across the Ontario environment industry. The study was commissioned by ONEIA and the research and analysis was performed by Deloitte.

A clear and compelling industry identity exists

The "environment industry" in Ontario is a vibrant and increasingly united group of businesses that, despite the very diverse areas in which they work, could identify with a common agenda of policies and measures they believe would support all environment businesses. A majority of questionnaire respondents agree that the following definition accurately reflects their business focus:

"The Ontario Environment Industry is made up of organizations or divisions of organizations based in Ontario – or with substantial operations in the province – whose primary business is the production, provision or development of environmental products, services, or technologies."

Opportunities and barriers to growth

Environment firms in Ontario report that the province is a great place to do business. They have good sources of well-trained and motivated employees, growing local markets for their products and services, and fair access to markets outside Ontario. They appreciate that governments seem to understand the value of their firms and are willing to discuss and implement supportive policies.

A number of companies are concerned that other jurisdictions may have even better business environments in which to operate. Many of them believe that Alberta, Quebec and British Columbia are more hospitable to environment firms in Canada. California and Germany are cited as leading jurisdictions outside of Canada.

This report profiles what the Ontario environment industry sees as the top five opportunities for growth that could enable global leadership for the sector. (See box “The highest impact opportunities” on next page)

Environment firms see Ontario’s regulatory system as a key factor in promoting growth but believe that the current system does not keep pace with innovation. While they favour strong environmental protection for the public, they believe the rapidly changing needs of business support the requirement for greater flexibility. In practical terms, they believe that our regulatory environment slows down the pace of innovation and inhibits the ability of environment firms to grow and take advantage of opportunities. In day-to-day operations, for example, 70% of respondents believe that it takes 1.5 times as long – or even longer – to get approvals to proceed with a project or development in Ontario compared to other jurisdictions.

Respondents also cite the use of “smart regulation” by other governments to encourage growth in their environment sectors. They say that more is being done in leading jurisdictions to create local demand for environmental products and services. This includes the degree of stringency of environmental regulation and enforcement, and the use of public investment to mandate the use of environmental technologies, products and services in public contracts and public buildings.

They perceive that the Ontario and federal governments have placed a priority on developing exports, whereas they believe building a healthy home market is necessary before focusing on export-led growth. Firstly, government “green procurement” is seen as critical in this area, with government lending significant credibility to Ontario companies when selling abroad if it acts as early adopter of new technologies. As well, increasing the size of the

local market for emerging and established technologies can enable Ontario companies to gain advantages of both scale and experience.

Respondents also believe that government can do more to encourage businesses and individuals to value environmentally sustainable outcomes. They favoured policies that would put market-based incentives in place (e.g., mandating or paying higher value for green products and services) and prices that better reflect environmental externalities (e.g., “real” costing for water and wastewater services).

Respondents believe that governments should set overall outcomes and let market forces determine which specific technologies are used to meet these standards. Fully 80% of respondents advocate a focus on outcomes or on a blended approach, rather than on picking winners and investing public funds to favour certain approaches over others.

Many small enterprises were concerned by what they see as an apparent government emphasis on large development projects and the funding of primary research at academic institutions, rather than on innovation within established companies. Many respondents take a dim view of existing funding and tax-credit programs, saying that the time and resources it takes for their firms to apply for funding and meet reporting requirements negates any benefit they might receive.

A potentially fundamental issue regarding government programs is a low level of reported awareness of federal and provincial support programs. Across 26 programs that were surveyed, awareness is typically less than 50% and sometimes as low as 10%. This suggests that potential applicants for such programs may not always be aware of available funding support.

Companies saw these opportunities as inter-related, forming potential pieces of a comprehensive strategy to encourage domestic growth. Underlying this view was their caution that the province might not be able to realize the full potential of its environment industry if the opportunities are addressed in a piecemeal fashion.

Ontario's opportunity

Many business and government leaders believe that Ontario's economy is at a critical point. The Minister of the Environment recently noted that "environmental businesses can play a critical role in Ontario's economic recovery" and that "the new green economy of the 21st century is critical for Ontario, and a key part of Ontario's future growth³."

There is a worldwide trend toward sustainability and increased environmental protection. Globally, governments are increasingly investing in the environment, which could lead other jurisdictions to become the growth centres of the new green economy. Ontario may have already lost any advantage in photovoltaics (led by Germany) and wind power (led by The Netherlands, Denmark and others). Investment elsewhere is increasing rapidly, including in the US where more than \$79 billion is proposed for energy and the environment in the 2009 temporary stimulus bill and \$150 billion in ongoing funding is earmarked for improving green technology over the next decade⁴.

This report identifies practical ways in which Ontario can live up to its promise to become truly "open for business" for environment industry firms.

Politicians are encouraging environment firms to be bold and challenge government. It is clear from experiences in other jurisdictions that good economic outcomes are more likely to result if environment

The highest impact opportunities for Ontario to support the growth of the environment industry^{1,2}

- **"Green requirements" in public procurement and contracts:** Government can take a leadership role and become an early adopter of new technologies and set efficiency, waste and emission targets for public contracts and public buildings.
- **Market-based incentives that recognize costs of environmental issues (e.g., tipping fee surcharges):** Use taxes, fees, and regulated pricing to encourage buyers to minimize energy use and waste, thereby encouraging purchase of environmental products and services.
- **Reduction of approval time for new sites, new technologies and modifications to existing operations:** Reduce the time between starting an application process and actual groundbreaking for a new facility, proceeding with brownfield remediation, implementation of a new technology, or modifications to an existing facility. One concept for consideration would be guaranteed approval times, which have been successfully introduced in some provincial programs.
- **Expedited or flexible permitting for new innovations (e.g., demo sites/pilot project exemptions):** Establish flexible or adaptive application processes to allow businesses to quickly implement small-scale experiments with new technologies and processes, making Ontario a great place to innovate and showcase success.
- **Enforcement of existing environmental regulations:** Continued effective enforcement of current environmental regulations to build a core set of companies that can, in turn, help the broader economy become more environmentally efficient.

businesses are encouraged to grow, innovate, and incubate new technology. An important success factor for the future of the Ontario environment industry will be the development of an integrated process for business and government to work together to develop policy that delivers environmental and economic benefits to Ontario and its citizens.

1 This short list of five items is from a list of 17 that were considered in the questionnaire. These five were identified by respondents as both very important to the success of the sector and as something for which there is a great deal of room for improvement in Ontario.

2 The opportunities are listed in no particular order relative to importance or opportunity.

3 Minister John Gerretsen, ONEIA breakfast, March 12, 2009

4 The Economist, "Sins of emission", March 12, 2009

A word from The Ontario Environment Industry Association

On behalf of the Ontario Environment Industry Association (ONEIA), I am pleased to jointly present this report with the public sector strategy team at Deloitte.

Since ONEIA's founding in 1991, we have seen Ontario's environment sector grow markedly, as product, service and technology companies have emerged to meet domestic – and world – demand. With this growth has come a unique partnership with several Ontario ministries who share our overall vision of a vibrant sector that delivers both economic and environmental benefits to our citizens.

One of ONEIA's responsibilities is to help its members participate in our province's ongoing discussion about its economic future, adding their perspective and concerns to those of others so that government can make the best possible public policy. I am confident that this report is a valuable addition to this role and will serve in coming years as a touchstone for the future of our sector and our province.

I would like to thank our partners, the Ontario Ministries of Environment, Economic Development and Research and Innovation, and the Ontario Centres of Excellence. I would also like to extend a special thank-you to our CEO advisory committee and the many companies across Ontario who took time to share their ideas and concerns that have become the foundation for this report. We look forward to working with you and the province to take these ideas forward in the coming years.



Alex Gill
Executive Director
Ontario Environment Industry Association

This project was guided by the ONEIA CEO Advisory Committee which provided input into the overall project design (note that the final report was developed and edited by Deloitte)

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1 Introduction

Objectives of the report

From the outset, ONEIA and Deloitte set a very specific focus for this report. The primary goal was to answer the question: What are the barriers to growth for the environment industry in Ontario? The goal was to take this research to a very practical outcome – recommendations that government and industry could understand and act upon. For example, saying that “the regulatory environment is a limitation” would not be adequate. We needed to know more about the specific reasons that existing regulations and their enforcement create or inhibit innovation by Ontario environment firms. Taken together, these insights could then be applied to help ensure that Ontario takes a leadership position in the green economy future.

Early in the process, we took guidance from the Ontario Minister of the Environment, The Hon. John Gerretsen, who advised us to “Be bold! Challenge us. And be practical⁵.” As such, this report represents the major themes that resulted from the interviews and online questionnaire.

This report is not intended to give specific policy or regulatory recommendations to any level of government. Rather, it focuses on key problems and opportunities that industry and government can explore further and, if possible, develop practical solutions.

How this study is different

Many studies are conducted on various economic sectors each year. This study differs somewhat from most of those studies in both its focus and its methodology.

This study focuses on identifying the barriers to growth for the environment sector in Ontario. As such, it involved a “bottom up” process that asked participants on the front lines of the environment industry across Ontario to identify these barriers and consider practical solutions that would then move the issues forward.

The methodology relied on interviews, focus groups, and an online questionnaire⁶. Formal analytical frameworks and economic theory were not used to identify the factors affecting growth. The approach was based on the premise that those involved on the front lines of Ontario’s environment industry know best the factors that affect them – and would know best how to change them for the benefit of all concerned.

One potential weakness in the report is that responses were influenced by respondent perceptions. In some areas, they may also have been a reflection of how Ontario’s environmental business climate has evolved in the past and may not fully reflect recent progress on a number of fronts.

“Be bold! Challenge us. And be practical.”

Minister John Gerretsen, ONEIA breakfast, March 12, 2009

⁵ Minister John Gerretsen, ONEIA breakfast, March 12, 2009

⁶ More detail on our methodology can be found in Appendix I.

Environment industry definition

For the purposes of this report, the definition of the Ontario environment industry is:

“The Ontario environment industry is made up of organizations or divisions of organizations based in Ontario – or with substantial operations in the province – whose primary business is the production, provision or development of environmental products, services, or technologies.”

This definition includes the many businesses that are involved in the clean technology space, those firms that develop and produce environmental products, and the many services firms that form a significant part of the sector (e.g., environmental engineering firms) and support its operation and evolution (e.g., insurance, legal and finance firms). It is important to note that the “environment industry” consists of firms whose primary business is providing support, delivery, and design of products and services, not those that buy or use such products and services in an effort to “green” their companies. By this definition, a factory that reduces its energy usage is not considered part of the environment

industry, but the firm that designs or installs the technology to increase energy efficiency – or advises the firm on how to do so – would be.

It is also useful to define ‘environment’ products and services:

“Environmental goods and services are used to measure, prevent, limit or correct environmental damage (both natural or by human activity) to water, air, soil as well as problems related to waste, noise and ecosystems. They also include clean or resource efficient technologies that decrease material inputs, reduce energy consumption, recover valuable byproducts, reduce emissions and/or minimize waste disposal problems?”

This definition of the Ontario environment industry is relevant for two reasons. First, it received broad support from our sample, with 85% of respondents agreeing that it at least somewhat accurately represents the sector of which they are a part. Second, during the course of research for this report, clear themes and issues emerged that apply across the industry, making a definition of the environment industry highly useful.

Examples of areas where a firm’s primary business focus may fit within this definition of the “environment industry”

Air quality	Wind energy	Energy metering
Water quality	Solar energy	Smart industrial controls
Waste and recycling	Small hydroelectric	Cogeneration/district energy systems
Brownfield remediation	Geothermal	Green buildings
Monitoring/analysis	Biofuels	Energy storage
Environmental legal services	Energy from waste	Hydrogen & fuel cells

Who was engaged

The researchers engaged a diverse group of professionals throughout the environment sector in Ontario.

During the qualitative phases, industry representatives from Ontario's major business centres participated: the Greater Toronto Area, Ottawa-Kingston, London (southwest Ontario), Sudbury and Kitchener/Waterloo. The firms represented a range of product and service sub-sectors, including site remediation and brownfield development, energy conservation or generation, solid waste management and recycling, and air pollution monitoring and control. Participants were typically at the manager level or higher, with VP Government Relations and CEO being among the more common titles.

Survey respondents represented a reasonable cross-section of the Ontario environment industry. The large number indicating "Other" when asked to choose a category for their business is reflective of the

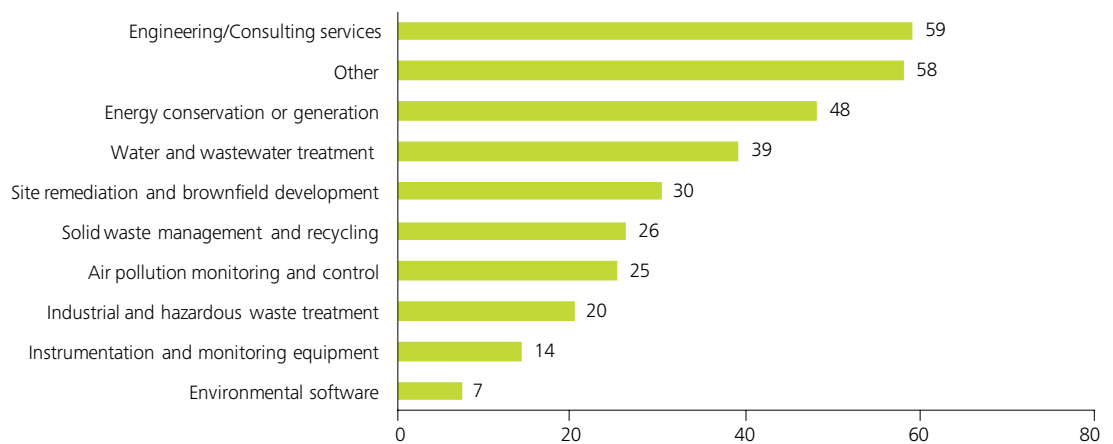
diversity of the sector and of the fact that, for some organizations, the environment operation is a business unit of a larger organization.

Fifty-seven percent of respondents⁸ reported being from firms with a professional services function (this may represent a modest overweight relative to the actual make-up of the environment industry in Ontario). Thirty-eight percent were from product businesses, and 25% were from service-focused firms. Another 16% indicated "Other".

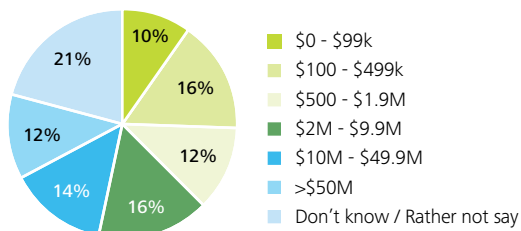
The size of organizations the respondents represented varies widely, with 28% representing firms of more than 100 employees and 23% representing firms with one to four employees.

A significant portion of respondents are exporters or have operations outside Ontario, with 26% reporting activity in other provinces, 22% in the United States, and 13% in Europe.

Sub-sector of firms surveyed (Number) (Respondents could choose more than one)



Annual revenue of firms represented by individuals surveyed



How this report is organized

The report starts by identifying overarching themes, then provides detail on specific aspects of the supporting business context for environment firms, and finally brings together the analysis. Throughout the report, selected results from the quantitative survey are referenced. There are also related insights that were uncovered during the qualitative phases of research, and complementing facts and examples from secondary sources.

Overarching themes

- **Ontario's green economy opportunity** provides context that was considered while the research methodology was created.
- **Desired role of government** identifies the underlying philosophy that respondents say they would favour as the foundation for economic development in this sector.

- **Business climate for environment firms in Ontario** quantifies how environment firms view Ontario as a place to do business.

Aspects of the Business Context

- **Regulation** outlines the aspects of regulation that impact the operations of Ontario firms relative to those in other jurisdictions.
- **Demand & competition** covers the importance of things that the environment industry says that government can do to increase demand for products and services delivered by local providers.
- **Finance, taxes, and grants** identifies how respondents believe financial limitations impact their businesses and the areas where government may help.
- **Talent & education** identifies what respondents see as the relationship between the skills of new hires and their existing employees and their impact upon their business.

Synthesis

- **Core priorities** integrates various aspects of the analysis to identify where resources might best be applied to support the future growth of the environment industry.

Appendices

- **Appendices** provide information on the methodology that was employed and selected definitions.

2 Ontario's green economy opportunity

With more than 2,600 companies employing approximately 65,000 people and generating \$8-billion in annual revenue, Ontario's environment industry is a significant economic force within the province. Within Canada, Ontario is the market share leader, accounting for 43% of the country's environmental revenues^{9,10}. And many Ontario companies are world leaders in technology and specialized services for air, water, waste, renewable energy and sustainable development.

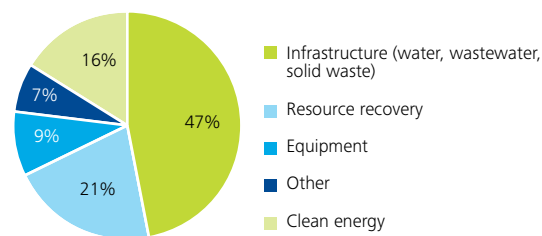
The global growth of the environment sector and the development of new legislation and regulations to control greenhouse gases, air pollutants¹¹, toxic chemicals and waste presents tangible growth opportunities for Ontario's environment firms.

The following information describes the size and potential growth of the global environment industry, identifying both threats and opportunities for Ontario-based companies.

The global environment industry

The state of the global environment industry has been described by Environmental Business Journal (EBJ)¹².

The 2006 global market was valued at \$692 US billion (38% of which was in the US)



The environment industry has grown steadily since 1970, when it was valued at about US\$40 billion per year. The annual rate of growth globally declined from 14% in the 1970s to about 2-4% post-2000. The U.S. is the world's largest market for environmental technologies, estimated at about US\$300 billion per year. Recent growth in the U.S. market has been greater than 5% annually, outpacing overall economic growth.

Most senior industry executives believe that growth in the environment industry is increasing (50% of respondents to a 2007 EFCG Annual Survey¹³) while a lesser number (30%) believe that the industry is at a peak. Regions that rated highest in terms of prospects for near-term sales growth include India, China, Canada and the Middle East.

A 2008 survey by EBJ identified the state of the economy as the most critical external market and economic issue for the industry in 2008, especially in terms of impacts on land development and capital investment. Climate-change initiatives and the pace of new climate-change regulation were identified as critical issues, as was the importance of maintaining the overall sustainability movement. Government budget cuts were of particular concern, and the challenge of talent recruitment and retention was considered the most critical management issue.

9 Ministry of International Trade and Investment, http://www.ontarioexports.com/resources/sec_Environment.asp

10 Statistics Canada, Environment Industry: Business Sector 2002 (revised) and 2004

11 Common air pollutants such as carbon monoxide.

12 2008. Stubbs, George (senior editor EBJ). Post-Globe 2008: Environmental Industry Overview: 2007 State of the Industry. Environmental Business Journal. www.zweigwhite.com

13 Ibid.

Threats and opportunities for Ontario

Ontario faces both threats and opportunities in the new green economy. The main threat is that the province could slip behind other jurisdictions that are implementing aggressive technology and market strategies to support their environment industries.

In early 2009, the United States proposed a \$787 billion stimulus package that included \$39 billion for the Department of Energy and \$20 billion in tax incentives for clean energy. The proposed US federal budget calls for making a tax credit for research and experimentation permanent. Overall, the budget would invest billions in climate change research and development while guaranteeing loans for companies that develop clean-energy technologies. While this initiative presents a market opportunity for Ontario companies, it also threatens to encourage Ontario companies to locate in the U.S.

The Western Climate Initiative (WCI) is an effort among some provincial and state governments to cooperate on measuring and reducing greenhouse gas emissions¹⁴. It represents another opportunity for Ontario to gain early experience in the growing carbon-trading market. Depending on how the system is designed, Ontario companies will face threats as well as opportunities. If carbon allowances are auctioned in Ontario, for example, some of the funds raised could be used to stimulate environment industry research and technology development. On the other hand, if U.S. states create favourable market opportunities and offer more generous environment industry incentives, then Ontario businesses could face increased competition from new technologies and stronger U.S. companies that are growing to meet a need in their home markets.

The wind-power industry is a prime example of an opportunity for Ontario to create jobs and generate clean electricity. Ontario is home to some of Canada's largest wind farms. The province's wind-power capacity has increased more than 6,200 percent since 2003¹⁵. Incentives that support research and development and the rapid deployment of wind farms, and the manufacturing of wind turbines and components in Ontario, will compete with similar incentives being offered in neighbouring jurisdictions and around the world.

The United Nations Environment Programme (UNEP) has recently released a report noting that the emerging green economy could create tens of millions of new "green jobs"¹⁶. It has also published a policy paper outlining the basis for a "Global Green New Deal"¹⁷. The rapid development of new programs and incentives, and corresponding innovations emerging from environment firms around the world means that Ontario has a window of opportunity to tap into the emerging opportunities noted in the report. This window may rapidly close, however, as other jurisdictions move to take advantage of it.

14 <http://www.westernclimateinitiative.org/ewebeditpro/items/O104F18782.PDF>

15 2009. Wind turbine generates more green jobs in Ontario. News Release by the Government of Ontario. www.thegreenpages.ca. Accessed on April 6, 2009.

16 2008. Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World. UNEP. September 24, 2008.

17 2009. Global Green New Deal: Policy Brief. UNEP. March 2009.

3

The desired role of government

Overall, Ontario environment firms look to government for two things. The first is to set clear rules that will produce beneficial outcomes for Ontario citizens and the businesses themselves.

Survey respondents sent a clear message: they believe governments have a poor record of picking winning technologies (not only in Ontario) and that attempting to do so may be an impossible task. Forty-two percent of respondents suggest that government’s emphasis should be on setting environmental outcomes and allowing business to creatively meet them, while only 9% suggested an emphasis on “picking winners”. As one respondent said: “Don’t pick a solution – pick a target.”

Some Ontario environment firms do, however, see the need for balance, with 38% suggesting a mixed approach. In particular, there was a sense that selective “bets” could be placed on local technologies due to the upside potential for the local economy and because some emphasis on winning technologies may be required at very early stages in their development.

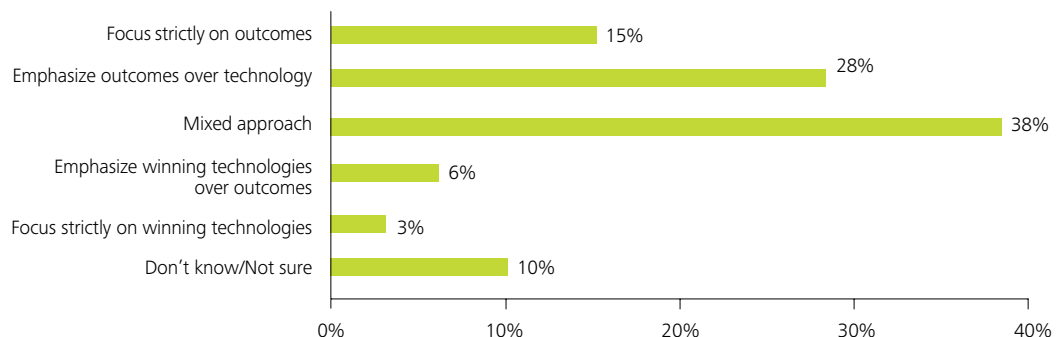
The emphasis on outcomes can be described as both philosophical and practical on the part of participants. Philosophically, they believe that environment firms operate most effectively when they innovate to respond

to market signals. An outcomes-focused approach is more likely to produce creative and economically effective solutions versus a more interventionist approach. Practically, they suggested an outcomes-driven approach is easier on government and more likely to allow the firms with the best business case to win. Several respondents mentioned that they perceive European governments to have a more specific focus on outcomes.

“Don’t pick a solution – pick a target.”

The second major role that the industry sees for government is to lead by example through adopting new environmental technologies and exceeding environmental regulations in its own operations. A government that leads the way with green requirements in the way it manages its own contracts, buildings, construction, and so on, will help to drive markets and encourage others to adopt sustainable approaches. A current example is the use of the Enwave deep lake water cooling system at the government’s Queen’s Park facilities, replacing traditional air conditioning equipment and lowering the overall energy usage of the complex¹⁸.

Conceptual approach to sector growth



4 Business climate for environment firms in Ontario

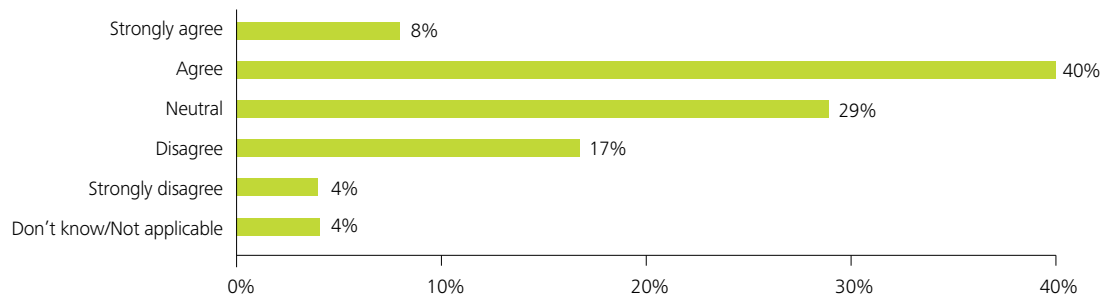
Overall, Ontario environment firms believe that the province is a good place to operate an environmental business. Forty-seven percent¹⁹ of respondents either agreed or strongly agreed that Ontario is “a great place for environment companies to do business.”

Study participants mentioned a number of reasons why Ontario is a good place to locate, including access to a large local market in the most populated province in Canada and easy access to the largest market in the world “next door.” Another key reason is access to talent, and others were Ontario’s standard of living and globally competitive educational institutions.

Participants believed Ontario’s competitive position with respect to other provinces could be improved. Sixteen percent of respondents agree or strongly agree that “Ontario is the best province in Canada for environment companies to do business.” That compared to 38% who were “neutral” on the statement and 32% who disagreed or strongly disagreed. Quebec, B.C. and Alberta were all frequently mentioned as possible jurisdictions from which Ontario could learn.

Interestingly, however, the other Canadian provinces are still not where Ontario environment firms suggest looking to for leadership. California, Germany, Sweden, and the Netherlands were suggested²⁰ as jurisdictions doing more to support their environment industries²¹.

“Ontario is a great place for environment companies to do business”



19 Doesn't match the chart due to rounding.

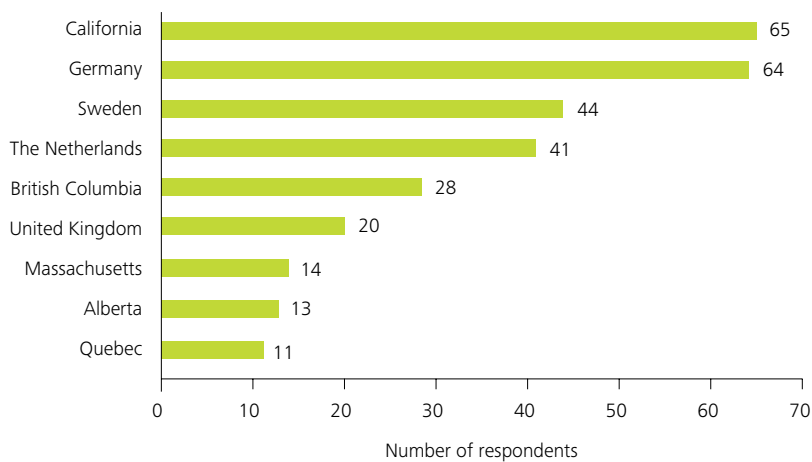
20 The shortlist of potential jurisdictions that we asked about was based on the names that came up during our qualitative research phases.

21 Although the question asked was focused on regulations, qualitative research suggested the same jurisdictions as leaders for other aspects of support for the environment industry.

Ontario environment firms also worry that these same countries may be doing more to position themselves as economies of the future. Perhaps not surprisingly, 84% believe that it is “Important” or “Critical” that all Ontario firms become more efficient and reduce their environmental footprint. But the sense is that markets like Germany are doing more to make their environment industries a key pillar of their economic policy as well as their environmental policy.

While 47% of respondents agreed that Ontario is “a great place for environment companies to do business,” just 16% said “it was the best jurisdiction *in Canada* in which to do so.”

“Where do you believe Ontario should look to as ‘an ideal model’ for its regulations and approval processes?” (Respondents could choose more than one)



Success story

How an Ontario partnership with the Netherlands may nurture growth in both countries' environment industries

The Netherlands provides an excellent example of how governments can partner with business to encourage growth in the environment industry.

Confronted by environmental issues as early as the 1960s and the ensuing oil crisis of the early 1970s, the Netherlands responded with collaboration between government, industry, and NGOs. During the 1970s, "Carless Sundays" were one means of fighting real issues, such as highly polluted winds blowing in from heavy industry in neighbouring countries. A host of proactive environmental standards and targets have since propelled the environment industry to world-class status. One estimate is that 12% of total global environment industry production today has a Dutch component. For a nation with just 0.25% of the global population, this is an enviable achievement.

Ontario has shown itself to be open to learning from the Netherlands. In the fall of 2008, the Ontario and Dutch governments negotiated and launched an innovative Memorandum of Understanding (MOU) to build a collaborative Environmental Framework and Roadmap between the two countries. Activities will include joint research and development, feedback to policy makers, capturing of best environmental practices, government-to-government dialogue, and student exchanges. Spearheaded by Dutch Consul General Johan Kramer, these activities will focus on key sectors, such as waste, water, soil renewal, and alternative energy. The goal is to join forces and help both parties compete better globally. The MOU will employ various tactics, such as workshops, trade shows, and enhanced university curriculum, in the coming five years to realize environmental benefits and industry growth.

Though in the very early stages, this MOU has active support from the Ontario government. In the Netherlands, Kramer states, environmental policy is a key driver of economic growth, with the experience that industry can innovate in response to the conditions set by government.

5 Regulation

Respondents clearly identified the regulatory environment as the area Ontario can most improve to support the growth of its environment industry. In fact, regulatory issues significantly outweighed other factors, such as access to financing. Fully 60% of respondents rated “Regulatory environment and processes” as “Very Important” while only 44% gave the same rating to “Access to Capital.”

This section elaborates on some of the key aspects of regulation, specific barriers to growth related to regulatory issues, and how the barriers might impact growth potential.

Overview of aspects of regulation impacting the sector

Several themes regarding regulation recurred in the research, including the following processes that are overseen by the Ontario Ministry of the Environment:

- **Certificates of approval (sites, technology/ processes, remediation):** Formal permissions that are given to firms to allow them to proceed with the development or clean-up of a new site, implementation of new technologies, etc.
- **Changes to certificates of approval:** Changes to Certificates of Approval vary widely but commonly involve the storage of hazardous materials (e.g., how they are stored and the amount allowed on a site), and the type of waste produced by a given facility.
- **Land disposal restrictions:** Limitations on the disposal of untreated waste at landfill sites.
- **Clean air permits:** Permission to run technologies and processes that result in pollution being emitted into the air.

Regulatory issues impacting environment firms

During discussions about regulation with Ontario environment firms, several themes emerged. Central among these was a perceived high level of risk aversion

in Ontario that does not exist to the same degree in jurisdictions elsewhere. Study participants cited many examples of technologies that have been approved for use in Europe or in US states that are still not approved for use in Ontario. A few respondents also said that their made-in-Ontario technologies were being marketed elsewhere first because of slow or expensive approval processes at home.

A second theme was the ability of the regulatory system to adapt to change. Examples were provided of technologies inappropriately put through review processes (e.g., one individual was aware of a biofuels facility put through processes designed for a waste processing facility). Some environment businesses have been frustrated by what they believe was a change that would clearly have a net benefit to the environment (e.g., a new process would generate less hazardous waste), but the adoption of the technology required expensive and time-consuming processes to make a change to their certificate of approval.

At the same time, examples in Ontario of flexibility or reasonable time and cost were cited, but those experiences were in the minority.

Approval processes take too much time

A core issue for businesses involved in the sector has been the time required to obtain approvals. Significant amounts of time can elapse between submission of an initial application and the final approval that allows work to begin on a project, or for approval of a change to operations at a facility. This time can range from months for small projects to years for major initiatives. Among those who offered an opinion (i.e., did not select “Don’t know/Not applicable”), 70%²² believe that it takes at least 1.5 times as long to get certificates of approval in Ontario than in comparable jurisdictions. Just 3% of respondents said that approval times are faster in Ontario. Some

22 It’s important to note that 41% of respondents answered “Don’t Know / Not Applicable” to this question. It’s fair to say that those who are impacted by the approvals process have strong feelings about it.

respondents mentioned the cost of such processes, but suggested that the impact on the speed of development is more important than the cost of making an application, although they suggested that both are relevant and have real impacts.

70% of respondents believe that it takes 1.5 times as long – or even longer – to get certificates of approval in Ontario than in comparable jurisdictions.

Some participants speculated that slower processes in Ontario come not just from regulatory issues but from organizational challenges within the Ministry of the Environment. They describe how authority is devolved in other provinces (such as Quebec) so that regional and lower level personnel are empowered to make a decision, which expedites application processes.

It is important to note that while Certificates of Approval were the most frequently mentioned concern of environment industry firms, other approval processes are also important to them. For example, they also mentioned that long periods of time can be required to obtain municipal approvals for new construction and retrofits.

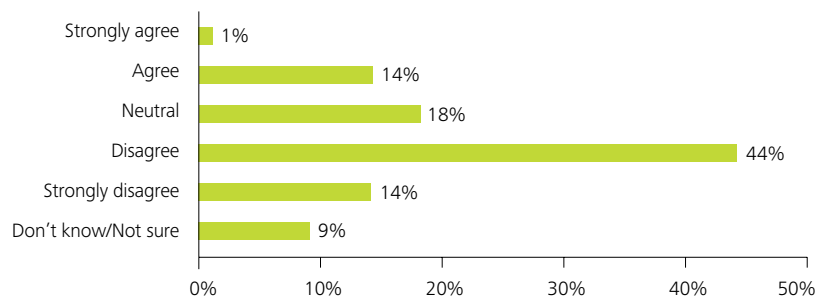
“Flexibility”

“Flexibility” is a word that came up frequently during the research and that was used in relation to several subjects. One was the need to have rules that quickly adapt to the changing requirements of the industry as new technologies are introduced. For example, study participants mentioned programs in Quebec specifically designed to allow for expediting the testing

of experimental technologies, whereby smaller scale and temporary operations are not required to meet equally strict application and regulatory requirements that apply to larger and more permanent facilities.

Respondents also frequently mentioned what they perceive as excessive risk aversion when determining what is permissible. Administering the regulations can be particularly difficult given that relevant legislation allows for considerable judgement on the part of the experts within government to apply the rules appropriately. This point around flexibility is closely related to the prior point around the perceived tolerance for risk within the province’s regulatory agencies. The costs that result from inflexibility are most acute when there are shifts in economics and technologies employed by industry. A recent example is the declining market prices for recycled materials, which has led to the temporary warehousing of recyclable waste material in some storage facilities that is difficult for firms to deal with in the short term.

“The evolution of environmental regulation in Ontario is keeping pace with technological innovation”



Brownfield remediation

Brownfield remediation refers to the cleanup of abandoned or underused land that may be contaminated. It offers a number of specific challenges as a sub-segment of the environment industry. Service

firms focused on remediation frequently point to Quebec as having significantly more business-friendly remediation processes. Key ways suggested to improve the performance of the sector included reducing the turnaround time required for a government response to applications, and making changes to application processes to make them more interactive. According to practitioners, applications are submitted, feedback is received and then a re-submission usually takes place. Another re-submission and feedback round can then follow. An interactive process with questions and feedback about what may be acceptable received verbally would expedite the process and reduce the cost of application. (See figure below.)

Some brownfield specialists pointed to British Columbia, where they said it is possible to get an “approval-in-principle” that allows construction to begin before the approval process is fully complete, while still meeting public safety requirements.

Regulations restricting growth in Ontario

Regulations serve an important purpose in protecting the environment and well-being of citizens in Ontario. However, regulatory processes should be balanced

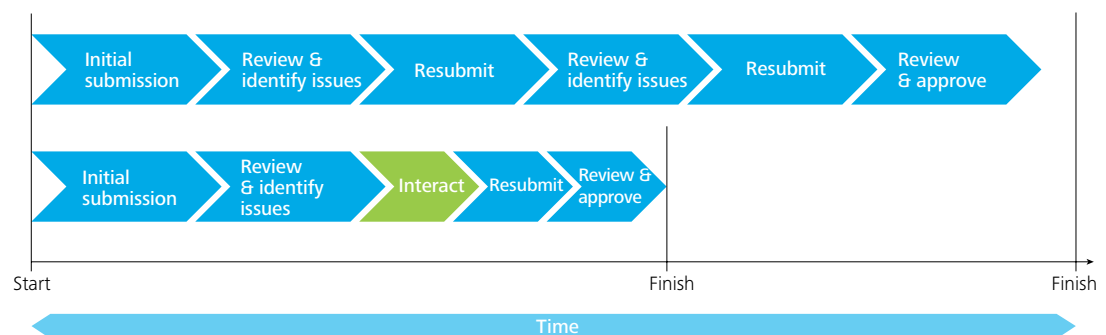
with the need to create an impression globally that the province is “open for business”. Fully 79% of respondents agreed or strongly agreed with the statement: “The time required to gain approvals has a significant impact on Ontario’s economic competitiveness.”

Many environment firms that are going to market with innovative technologies or services mentioned the need to demonstrate safety and market acceptance at home as they approach global markets in order to overcome scepticism about their products. Some have avoided this by marketing their products in other jurisdictions first.

In the short run, the costs of regulation can be both out-of-pocket and hidden. Out-of-pocket costs are spent on legal help and consultants to assist with application processes. There is also a significant amount of management time and expertise invested in applications and conforming to regulatory requirements that diverts attention away from growing their business.

While brownfield remediation may not have the glamour of new technologies, it is a key enabler of continued industrial and commercial development in Ontario. Brownfield work that is held up for long periods of time

Two approval processes – Illustrative



Insight into respondent recommendations for sector-friendly regulation

- Application processes have guaranteed turnaround **time commitments**.
- Application processes can include **across-the-table feedback** from government, rather than blind application and re-submission processes.
- New technologies are given **fast-tracking**, rather than being forced through old inappropriate processes.
- New technologies can be **tested at an existing site** with a minimal administrative process.
- There are **simple processes to screen changes to approvals**.
- The public is involved where appropriate, but **without multiple rounds of appeal**.
- **Temporary reprieves** are given, where appropriate (with term limits).
- New technology pilots and **demos are given greater latitude**.
- Defined by the right environmental **outcomes, not by technology**.
- Regulations are **steady and predictable** to allow long-term planning.
- Regulations are **harmonized** across municipalities and provinces.
- Emissions targets have **balance** and are based on science and the drive for environmental leadership.

impacts the cost of developing new factories and facilities for derelict, unproductive, or unsafe land. Brownfield delays also have other, underappreciated environmental side effects, in that impediments to redeveloping urban lands also limits the ability of cities to intensify, reducing commuting times, energy useage, etc.

Time is particularly important in real estate development in which project durations are already long and where the cost of capital is a large part of the cost considered in making decisions about what to develop and where.

Development time also impacts the cost of doing business across industries and could impact the province's reputation as a good place to locate many types of new facilities. Reducing the cost of cleaning up and developing contaminated sites can also reduce a an unfortunate incentive; some survey participants said that landowners will sometimes leave contaminated land undeveloped because of the economics not only of cleaning up the land, but also of gaining the approval to do so²³.

Fully 79% of respondents agreed or strongly agreed with the statement: “The time required to gain approvals has a significant impact on Ontario’s economic competitiveness.”

23 An additional consideration is what brownfield specialists say are regulations that – while well intentioned - force old style dumping of contaminated soil in landfill, rather than utilizing other techniques for in-situ cleanup.

6 Demand & competition

Broadly speaking, Ontario environment companies have been satisfied with the degree of access that they have to foreign markets and consider the competition they face locally from out-of-province and foreign competitors to be fair. But they also believe that the Ontario government could be doing more locally to increase demand for environmental products and services.

Demand for green products and services in Ontario

As one study participant said: "The environment industry is such that it is regulation-driven – worldwide." This means that environmental laws are the most important factor driving both consumers and businesses to utilize environmental services, products and technology. Thus, jurisdictions that will be the future leaders of the environment industry will be those that show leadership in environmental regulations.

Many also stated that other jurisdictions are using their public procurement processes to demonstrate leadership and drive the market. More specifically, governments in those jurisdictions are seen as early adopters of new technologies, fostering innovation and helping new ideas to reach a viable commercial phase. They also expect public buildings and projects to meet a higher standard, which helps to increase scale for parts of the industry that are providing more established and mature technologies.

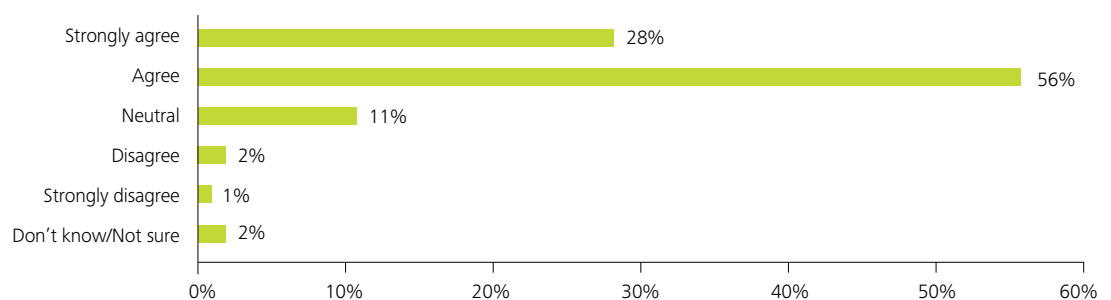
Fully 83% of respondents agreed or strongly agreed with the statement: "Ensuring that Ontario government contracts have specific **green procurement** targets would provide a long-term benefit for the environment sector in Ontario."

A current example of local governments creating market growth for established green technologies is the use of green power targets by many Ontario municipalities. Outside Canada, the examples are many and even include the US military, which is a significant purchaser of re-refined oil products²⁴.

Interestingly, respondents believe that green procurement is potentially more valuable than programs that directly demand Ontario content to earn a public contract. Only 45% agreed or strongly agreed with a similar statement about "Buy Ontario" requirements in public procurement.

Overall, the qualitative research suggested that Ontario firms believe the province should look to Europe for leadership on regulations surrounding emissions and recycling. Strict rules there are creating strong companies that have been innovative in meeting regulatory demands. One example is Germany, where since the year 2000, growth in its photovoltaics industry has been partly encouraged by government requirements that a

"Ensuring that Ontario government contracts have specific green procurement targets would provide a long-term benefit for the environment sector"



significant and rising percentage of power come from renewables. The large local market in Germany is one of the reasons that firms from other jurisdictions – including Ontario – have chosen to locate key facilities there and why Germany is now the world’s third largest producer of solar panels²⁵.

Price signals

Most study participants said that price signals – also known as market-based incentives – are one of the most important tools that government has to increase the local consumption of environmental products and services and encourage companies to deliver more efficient services, products and technologies. In general, respondents suggest two things: first, that price signals are more effective than grants, particularly for technologies that are in the commercialization phase; and, second, that (in general) charging for environmental externalities is more effective than directly paying more for environmentally beneficial products and services.

“Jurisdictions that will be the future leaders of the environment industry will be those that show leadership in environmental regulations.”

Several specific aspects of pricing came up repeatedly as having the potential to drive growth:

- **Cost of landfilling contaminated soil:** Increasing this cost would make more nuanced solutions to site remediation economic.
- **Tipping fees and landfill taxes:** Increasing the cost of creating waste increases the incentive to minimize material use in product design, increase recyclability, and reduce the amount of land consumed per tonne of waste.

Ways environment industry firms say governments can boost demand for environmental products and services

- Mandating environmental technologies, such as in government buildings and projects in **government procurement** generally
- Leading with **tighter emission standards**
- Leading with **requirements for recycling**
- Legislating or encouraging **life cycle management**
- Using **market-based incentives** to mandate higher prices for environmentally beneficial products and services (for example, feed-in tariffs for green power) or increase the cost of environmentally harmful things (for example, through tipping surcharges for waste)

- **Feed-in tariffs for green power:** The rate paid for green power and using a broader definition of green power (for example, power produced from municipal waste) are important incentives for growth.

Competition in Ontario

Most Ontario environment firms said that local competition is fair between firms. The only exceptions encountered were areas where firms believe they face unfair competition with university facilities and with faculty who are effectively subsidized through the use of university facilities at low- or no-cost.

Finding ways to allow more firms the access they need to feed power into the electrical grid is a way to stimulate competition in the market for green power. While there may be associated technical challenges, some in the local green power industry point to examples of similar technologies employed in other jurisdictions, suggesting that the challenges can be overcome.

Access to markets outside Ontario

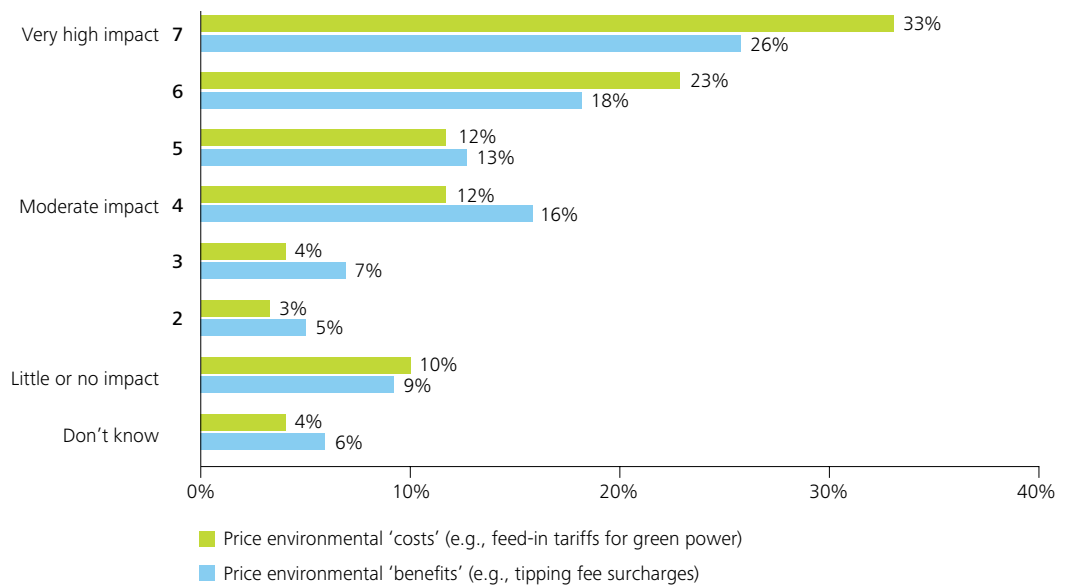
In general, Ontario environment firms believe they have excellent access to export markets. Only 17% said they disagreed or strongly disagreed with the statement: “We have fair access to markets outside Ontario”. In fact, many study participants felt that many federal and provincial programs are excessively focused on exports and not enough on making the most of the home market. They suggest that the best strategy to boost exports is to first develop local demand to provide scale and critical mass at home, which can then help to improve competitiveness when they look to enter export

markets. On a more tactical level, scale in local markets provides credibility for local producers when they are trying to sell abroad. One participant said buyers in other jurisdictions look at Ontario technologies that haven’t been adopted here and say “You want to sell me your widget and you can’t even sell it in your own market? Where’s the credibility?”

Some interprovincial barriers create costs for the environment industry that they believe are unnecessary, noting that harmonization of rules would reduce costs.

“You want to sell me your widget and you can’t even sell it in your own market? Where’s the credibility?”

The impact of price incentives (also known as market-based incentives)



Germany uses regulation and market-based incentives to drive global leadership in photovoltaics

After 10 years of investment in this sector, Germany is now reaping the rewards of a leading position in the design, production, and installation of photovoltaics. The benefits are the result of a long-term strategy to support the sector that has focused on visionary goals and market-based incentives to drive growth²⁶. Germany used several novel approaches: utilizing banks to provide administration and financing; allowing an amortization approach combined with long-term commitments that reduced initial costs; and, implementing a declining feed-in tariff rate that was high enough to provide an initial incentive while long-term commitments on rates created the stability that was required to drive investment.

Germany's overall renewables industry now boasts rapid growth, 249,000 jobs and sales of 24.6 billion euros, 35% of which are for export²⁷.

British Columbia has created a program that may have been inspired by Germany's, with the goal of installing 100,000 solar water-heated roofs by 2020²⁸. Many elements of Ontario's Green Energy Act have drawn upon lessons from Germany as well.

Year	Event	Impact
1999	100,000 Roofs Programme starts	Goal-oriented directive to increase the usage of PVs in Germany
2000	Renewable Energy Sources Law (EEG) becomes active	A plan to increase Germany's overall usage of energy from renewable sources
2003	100,000 Roofs Program (HTRP) ends	346 MWp ²⁹ installed from 1999 to 2003
2004	Increase of the feed-in tariff (EEG) Subsidies eliminated	Increases in PV construction
2007	14.2% of power from renewables; up from 4.7% in 1998	38,600 jobs in the PV sector
2009	Waldpolenz Solar Park fully operational	40 MW facility - the world's largest thin-film photovoltaic powder plant - expected to be fully operational by the end of 2009 ³⁰

26 "Experience with the German Performance-Based Incentive Program", www.wind-works.org

27 German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2008

28 Vancouver Sun, "B.C. sets goal for solar panels: 100,000 roofs by 2020", July 17, 2008

29 Megawatt Peak power

30 "Phase One of 40 MW German Solar Park Begun", Renewable Energy World, February 23, 2007

7

Finance, taxes, and grants

A majority of respondents (80%) agreed or strongly agreed that the Ontario government should use targeted programs and/or tax credits to encourage the purchase of products and services that are strategic to the development and growth of the environment industry. Unfortunately, the survey revealed that awareness of existing programs is relatively low. Those who do have experience with the existing programs suggest changes in the way they are administered to make them more helpful.

Awareness and access: Federal and provincial programs

Awareness of provincial programs and agencies is low

Respondents were asked about their level of awareness of 10 provincial government programs, funds, incentives and strategies, as well as their awareness of the Ontario Centres of Excellence. The survey participants had little awareness of the following programs – no

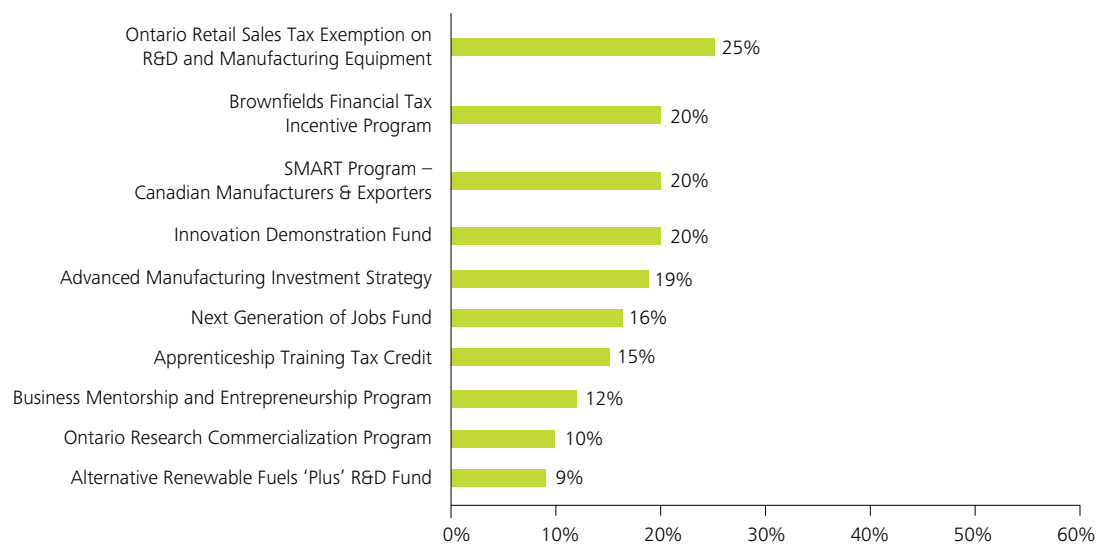
more than 25% indicated they were “Aware” of any of the 10 programs listed.

A somewhat higher percentage of survey participants (46%) were aware of the Ontario Centres of Excellence, which are arms-length agencies focused on helping organizations commercialize technologies.

Awareness of federal programs and agencies is somewhat greater

Survey participants were asked a similar question about their level of awareness of federal government programs and agencies. The results demonstrated greater awareness versus provincial programs and agencies, but overall, the level of awareness was also low – with the percentage of respondents indicating that they were “Aware” of the program or agency varying from a low of 6% to a high of 59%.

Percentage of respondents who are “Aware” of provincial programs



Smaller environment businesses feel ignored

Many of the survey participants from smaller firms suggested that government programs are not designed with their needs in mind. They believe a bias exists in some programs to funding “newsworthy”, larger-scale projects. One respondent said the attitude of some government agencies is “Why should we waste our time on the little companies?” There was a sense that those making decisions about funding do not appreciate the cumulative impact that small changes in many smaller firms can have on the environment sector and the overall economy.

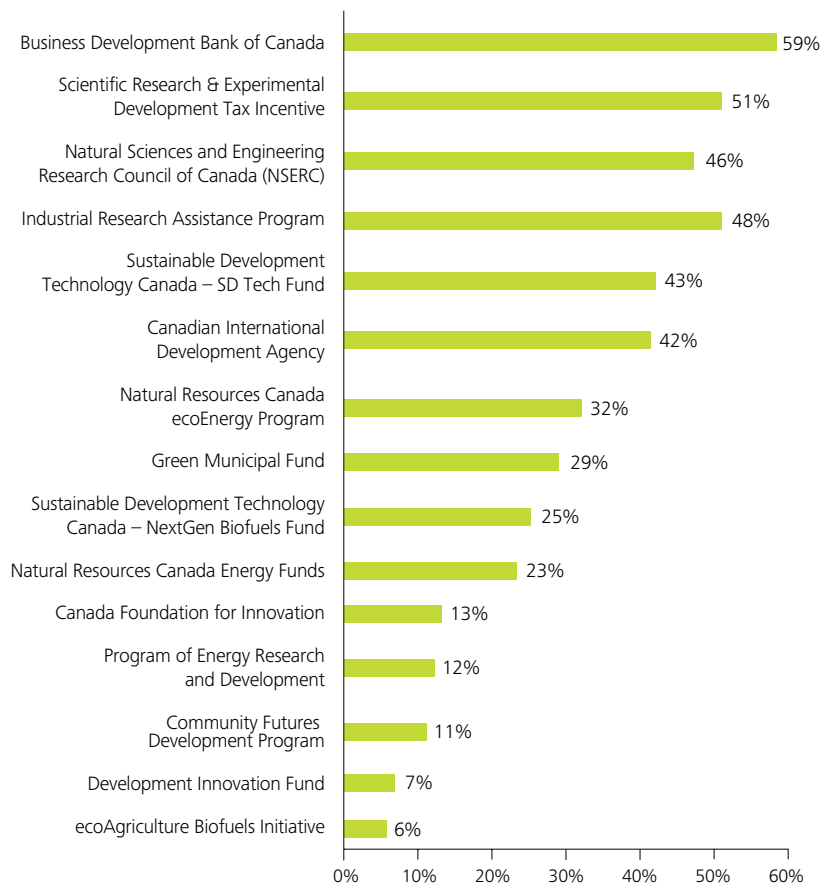
The respondents argued that government programs often focused on areas that will not deliver the outcomes they have identified, including focusing on:

- Technologies, rather than on other value-added elements, such as services
- R&D in academic institutions, rather than on commercialization or established firms
- Exports, rather than on domestic sales
- Offshore markets, rather than on the U.S.

Small firms also mention difficulties faced in trying to access existing program funding. One person said: “It’s not worth anybody’s time to apply for that sort of incentive,” suggesting that the time and cost of preparing the application made it prohibitively costly to apply, given the amounts of money that are available in some programs. One in five respondents (19%) suggested that this effectively constitutes a financial barrier; in fact, it was the highest ranked of eight financial barriers tested in the survey.

One anecdote may be extreme but is instructive: a firm operating across Canada mentioned that applying to one program in Alberta required a four-page application, while a similar program in Ontario required 40 pages. Another participant cited a 16-page application that was required for \$30,000 in funding. This entailed a significant cost of time and money, including management time and hiring consultants to help with the process.

Respondents who are “Aware” of federal programs and agencies



Companies need help with funding applications and reporting, and seek guaranteed turnaround times

Applications, reporting and permitting are all areas identified by research participants as important to their success. One idea, which emerged independently at two separate focus groups, was the creation of a “Service Ontario” for environment firms. Such an approach would see a specific government representative, ideally familiar with all the federal and provincial programs available to support environment firms. Fifty-six percent of respondents suggested that such a dedicated contact might be helpful.

Two-thirds of respondents favoured simplifying application and reporting requirements, while three out of five (63%) said that guaranteed turnaround times on applications would be beneficial.

Access to capital

Most small and mid-size firms said they access only a limited amount of financing through formal channels. Fully 71% of firms in the survey say they are at least partly

How the environment industry says grants can be made more useful

- **Smaller amounts** of funding are available for smaller enterprises.
- Smaller grants have **less complex** applications.
- Application **decisions are made quickly**.
- **Funds are released quickly** after a decision is made.
- Early stage **commercial research drives university involvement**, rather than vice versa.

funded through management ownership or are privately financed. Most interviewees during the qualitative research suggested that other barriers are more important than access to capital. However, only 30% of survey respondents indicated that “Availability of capital is not a constraint to our current operations or growth.”

Increased access to grants and loan guarantees was identified as being helpful to companies at various commercialization phases (with the percentage of responses indicating a greater than moderate impact shown in brackets)

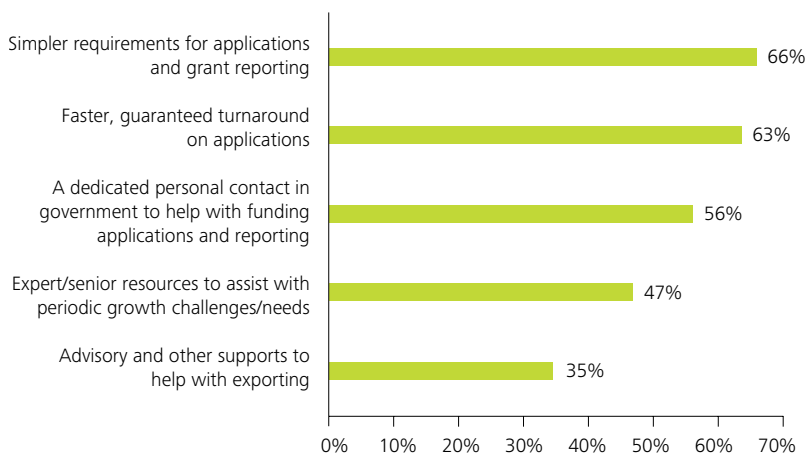
For access to capital

- When companies are conducting initial or applied research (69%)
- When companies are in the product development and demonstration stage (77%)
- When companies are taking their product to a broader market (71%)

For access to loans

- When companies are conducting initial or applied research (48%)
- When companies are in the product development and demonstration stage (63%)
- When companies are taking their product to a broader market (71%)

“How much of an impact – if any – could the following support initiatives from government have on your firm’s success?” (% indicating high impact)



The main difference between the two stages is the need for grants and equity capital rather than loans during the R&D phase. At this stage, revenues are more likely to be too distant for loans to be appropriate.

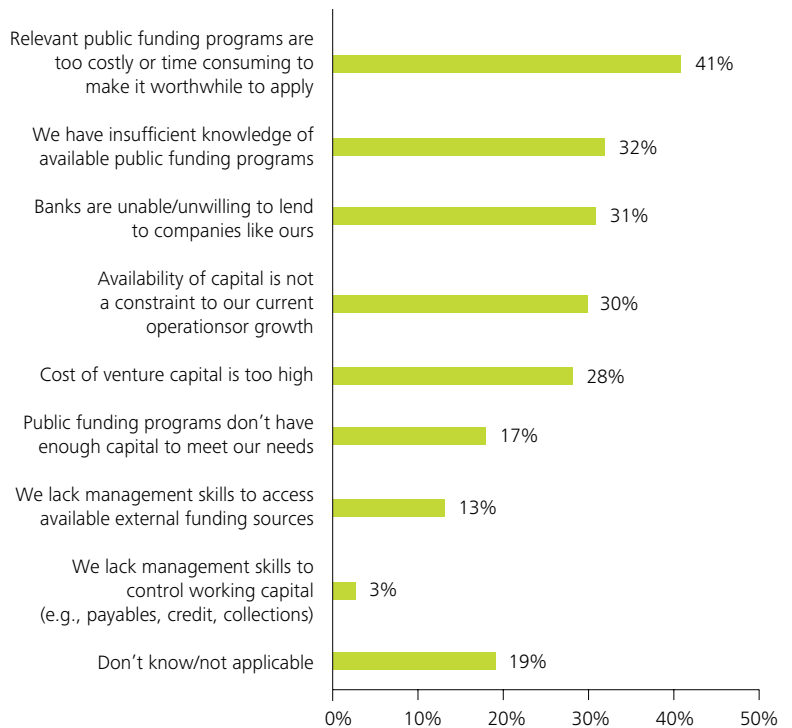
Several study participants said they had located some of their operations in other countries specifically because of the tax incentives and grants available there. One respondent said, "We'd rather have built the facility here in Ontario."

Venture capital

Only a small portion of survey respondents (7%) have used venture capital or angel investing. However, during the qualitative research, a number of themes regarding the market for venture capital in Canada emerged. In general, people in the environment industry believe there is a lack of scale, maturity, and depth of funding in the market in Canada, which gives US competitors a distinct advantage. At the furthest extreme, one study participant suggested that, for practical purposes, "the venture capital industry doesn't exist here anymore."

The sense in the environment industry is that if government does try to provide significantly increased funding to early-stage companies, it should apply two principles. First, it should try to "piggyback" on private capital rather than create an institution that might attempt to choose investments. Respondents suggested two ways to do this: 1) create and invest in "funds of funds," which are investment funds that invest in a portfolio of other investments rather than directly investing capital in companies, and 2) match investments made by private venture capital. Respondents also recommended that government should focus on smaller venture capital investment from the low one-hundred thousand to the two-million dollars range. The province already appears to be applying both suggestions with the Emerging Technologies Fund, for which clean tech firms are eligible.

Financial barriers faced by environment firms in Ontario³¹



Those participants from the venture capital industry echo much of what other study participants offered. They add that if many of the aspects noted in the Regulation and Demand & Competition sections of this report were addressed, it would draw more capital into the market. Particular areas mentioned include utilizing price signals and increasing demand through regulations, such as through tighter emissions requirements.

31 Note that a total of 206 respondents answered this question with a total of 438 responses as they could select more than one.

8 Talent & education

Overall, the research findings on talent and education were an unexpected surprise. Participants have been pleased with the quality of potential employees that are available locally³². Ontario environment firms believe that local universities and colleges are “world class” and the industry is close to being large enough that it can provide sufficient alternative employers to create a vibrant employment market and a local critical mass of skills relevant to the environment industry.

Availability of talent

The overall availability of talent is strong; a majority of firms stated they are able to find people when required. This suggests that talent is not a core barrier to industry growth in the province. Recruiters in the sector say that the availability of talent is aided by the sector’s appeal, with students actively interested in working for firms that are seen as addressing one of society’s most pressing concerns.

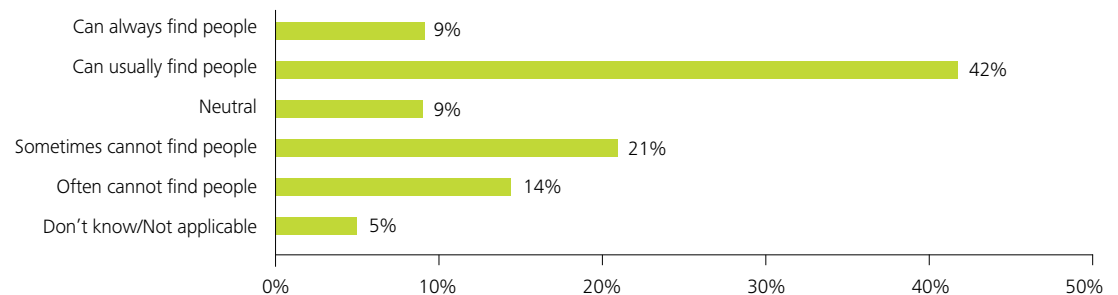
There are some exceptions in this area. A key challenge some firms identified was finding staff for the mid- to upper-levels of management, where candidates would need seven to 15 years of business or technical experience in order to act as leaders in the organization and provide guidance to junior staff on technical matters. Finding ways to accept foreign credentials was mentioned as a way to reduce this specific shortage.

A second factor was the difficulty finding people willing to do manual labour, such as heavy lifting. Participants agreed, however, that this is not unique to the environment industry.

New graduates

Environment-industry employers have been satisfied with the overall quality of the graduates that enter the industry from Ontario schools and their level of technical training. Only 21% disagreed or strongly disagreed with the statement “New college and university graduates have

“Are you able to find and recruit people with the skills that your firm needs to succeed in Ontario?”



32 Focus group facilitators were careful to ask people about the long-term trends in talent and not merely focus on the current economic environment.

the 'right' skills to be able to make a contribution within a reasonable period of time." The trend appears to be heading in the right direction, with one study participant noting that "the quality of young people and their skills is improving".

Most of the frustrations that employers in the sector noted with respect to new graduates are not unique to the environment industry. Some of the key factors mentioned are commonly associated with Generation Y³³. Three key themes were referenced. First was the tendency of junior hires to become quickly impatient with "low-level" tasks and a sense that they are unwilling to "pay their dues before they are ready to run the company". Some suggested that this was a combination of an excessive focus on environmental-policy issues (rather than the real work the environment firms do) in some of the educational programs, combined with unrealistic expectations on the part of the new graduates. Second was the need for stronger soft skills, including teamwork, written and verbal communication, and project management. The latter was a reason several mentioned that co-op programs are held in high regard, as co-op students tend to be further ahead on soft skills at graduation. There were a few notable exceptions with respect to technical skills, although they tended to fall into very narrow technical fields, such as atmospheric physics – among others – where employers may have to look out-of-province to hire appropriate graduates. A final frustration voiced with respect to new graduates was the tendency at smaller firms for young people to move on after they have "trained them" (one to two years after hiring). Very often, they move to firms with greater name recognition within the sector.

Companies' current teams

Companies were probed on the talent and competence of their current teams. A characterization of the industry that emerged in the focus groups is that some smaller firms are often driven by technical people who become challenged as they try to expand their companies beyond the 15-30 person range. Specifically, they note that these firms struggle to build increased commercial success on top of a successful technical foundation.

Ontario environment firms believe that local universities and colleges are "world class"

Industry growth also contributes to talent development. As the industry grows, the number of people experienced in managing and leading the growth of a firm from small- to mid-size increases, creating a critical mass of serial entrepreneurs in the sector. The scale of this skill set is one reason for a perception among Canadian venture capitalists that the US has greater depth of general management talent available to run environment firms.

Some of the study participants raised the issue of the looming retirement of a generation of experienced environment business managers, suggesting that innovative programs could be created to allow senior people in the industry to network with each other and provide a resource for firms that could benefit from it. Modest interest was also expressed in having reasonably priced access to senior resources with technical and business skills, with 44% rating this idea a high impact for their business.



Core priorities

Integration and potential priorities

Core priorities in this survey were identified using an “Importance – Performance Map” (See next page). The Importance and Performance ratings are quantitative and based on the survey results³⁴. The higher up the vertical axis, the greater the potential for improvement in Ontario (higher = worse current performance). The further to the right on the horizontal axis, the more important the item is.

Taken together, these two measures suggest that the items that are in the top right portion of the chart are those that have the greater opportunity for *impact* in the province if improvements are made.

It is important to reiterate that the ratings here are *relative*. They are not absolute assessments of performance; rather, they are rated in relation to each other. Having the highest index does not indicate a “perfect” score; it indicates the most extreme ratings by study participants. The scores of the other items are expressed in relation to the item that has been indexed at 100.

Five high-impact opportunities

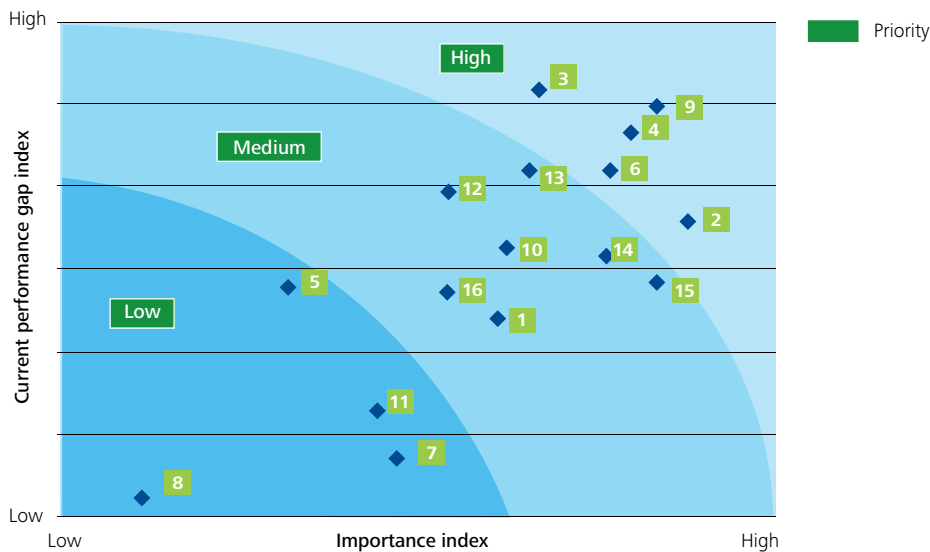
High-impact opportunities are rated as having both high importance to the success of the sector and significant potential for improvement within Ontario. Based on the input of those working in the industry, improvements in each of these five areas are most likely to yield benefits in the form of growth in the size and total employment of the sector.

Five high-impact opportunities

- **“Green requirements” in public procurement and contracts:** Government can take a leadership role and become an early adopter of new technologies and set efficiency, waste and emission targets for public contracts and public buildings.
- **Market-based incentives that recognize costs of environmental issues (e.g., tipping fee surcharges):** Use taxes, fees, and regulated pricing to encourage buyers to minimize energy use and waste, thereby encouraging purchase of environmental products and services.
- **Reduction of approval time for new sites, new technologies and modifications to existing operations:** Reduce the time between starting an application process and actual groundbreaking for a new facility, proceeding with brownfield remediation, implementation of a new technology, or modifications to an existing facility. One concept for consideration would be guaranteed approval times, which have been successfully introduced in some provincial programs.
- **Expedited or flexible permitting for new innovations (e.g., demo sites/pilot project exemptions):** Establish flexible or adaptive application processes to allow businesses to quickly implement small-scale experiments with new technologies and processes, making Ontario a great place to innovate and showcase success.
- **Enforcement of existing environmental regulations:** Continued effective enforcement of current environmental regulations to build a core set of companies that can, in turn, help the broader economy become more environmentally efficient.

34 The importance index is based on the total percentage of respondents indicating a 6 or 7 rating on a scale, with a 7 rating “Very High Impact”. The current performance gap index is based on the total percentage of respondents indicating 1, 2, or 3 ratings on a 7 scale, with 1 representing “Much Worse” (than comparable jurisdictions).

Core priorities: The potential impact of 16 barriers to growth



The numbers below refer to numbers shown on the graph and do not reflect a priority ranking.

Regulation

- 1. Emission levels specified in existing environmental regulations
- 2. Enforcement of existing environmental regulations
- 3. Approval time for new sites, new technologies and modifications to existing operations³⁵
- 4. Expedited or relaxed permitting for new innovations (e.g., demo sites/pilot exemptions)

Demand & competition

- 5. “Buy Ontario” emphasis in public procurement and contracts
- 6. “Green requirements” in public procurement and contracts
- 7. Trade agreements that enable access to foreign markets
- 8. Trade missions to potential export markets
- 9. Market-based incentives that place higher costs on environmental problems (e.g., tipping fee surcharges)
- 10. Market-based incentives to encourage suppliers to deliver environmental benefits (e.g., mandated higher consumer, business or government prices for green products, such as feed-in tariffs)

Finance, taxes, and grants

- 11. Assistance in entering foreign markets (through networks, foreign receivables financing, etc.)
- 12. Financial supports to facilitate private venture capital (for example, VC capital matching programs)
- 13. Loan guarantees
- 14. Targeted assistance (e.g., grants, tax credits) for early stage commercialization

Talent & education

- 15. Enhanced subsidies or tax write-offs for training existing employees
- 16. Government-sponsored training programs to provide needed technical or management skills

35 Note that this potential priority is an amalgamation of two priorities that were surveyed. The two items are similar and the results are highly correlated, so the two results are combined to determine their position in the “Core Priorities”.

The request by the industry for speed and flexibility in regulations to be able to make changes or test new technologies may, at first glance, seem to be at odds with the request for enforcement of existing environmental regulations. However, this is not the case. When companies ask for faster approvals and a more flexible approach, they are not asking for a relaxation of the rules, but for a process that also appreciates relative risk and the impact of regulations on their business. A notable exception to this point is for small-scale testing activities or demo sites that allow technologies to be proven. In the minds of industry participants, the potential for a small environmental cost may be greatly outweighed by the future employment and environmental benefits that new technologies can provide.

Ontario has an opportunity to show global leadership

Seven medium-impact opportunities

The seven medium-impact opportunities represent real potential. They were secondary either because Ontario's performance was rated highly, or because they were not of the highest importance.

These opportunities may represent a potential for targeted improvements, rather than major new initiatives. For example, rather than an across-the-board "Buy Ontario" campaign, it is possible that selected sub-sectors would benefit greatly from Buy Ontario initiatives or loan guarantees.

- **Emission levels specified in existing environmental regulations:** Mandate world-leading reductions in the emission of pollutants into the air and water.

- **Market-based incentives to encourage suppliers to deliver environmental benefits (e.g., mandated higher consumer, business or government prices for green products such as feed-in tariffs):** Provide subsidies or – where the government controls pricing – increase prices paid for products and services that provide a relative environmental benefit (compared to alternatives).
- **Financial supports to facilitate private venture capital (for example, VC capital matching programs):** Create programs that follow and support private venture capital to increase the total pool of available funding while avoiding having government "pick winners".
- **Loan guarantees:** Offer loan guarantees to increase the amount of funding available to environmental businesses.
- **Enhanced subsidies or tax write-offs for training existing employees:** Provide tax incentives to leverage training spending – mainly on already existing private programs or currently available programs through universities and colleges.
- **Government sponsored training programs to provide needed technical or management skills.** Provide programs to support the sector and its specific skills shortages. (Note that this was rated significantly lower than "Enhanced subsidies or tax write-offs for training existing employees.").
- **Targeted assistance (e.g., grants, tax credits) for early stage commercialization:** Assist business with clearing the hurdle between successful technology on the test bench and real-world market penetration.

Four lower-impact opportunities

These areas were generally rated as having lower impact, but generally stronger relative performance, within Ontario. These were areas cited by respondents that would *likely* provide the lowest impact if improvement efforts were undertaken³⁶. It is important to point out

36 Specific recommendations are not being made so it is not possible to say what the denominator is for any potential return-on-investment calculation.

that this does not mean that improvement efforts should not be undertaken in these areas, since the list of 17 possible improvement initiatives is far from exhaustive. The minimal interest found in export-focused initiatives aligned with the qualitative research. Study participants agreed that governments place too much emphasis on building export markets – to which access is generally felt to be quite good – and not enough developing the home market as a launching pad.

- **“Buy Ontario” emphasis in public procurement and contracts:** Mandate a certain amount of local content in public contracts.
- **Trade agreements that enable access to foreign markets:** Negotiate partnerships with foreign governments to ensure unfettered access to those markets.
- **Trade missions to potential export markets:** Use the political apparatus to increase Ontario’s visibility in foreign markets, and assist with gaining approvals and closing deals.
- **Assistance in entering foreign markets (through networks, foreign receivables financing, etc.):** Provide contacts to help with supporting business development and provide financial instruments that reduce the risks of exporting.

Two paths for the Ontario environment industry

Carving out a future in the Ontario environment industry will not be easy. The Ontario government is not the only jurisdiction in the world to recognize that environmental services, products, and technology are vital to its future. Other governments view the sector not only as a means of future-proofing their economies, but also as a means of import substitution (e.g., replacing imported fossil fuels with locally made environmental products and services

or efficiency technologies)³⁷. In the race to build scale in the sector, “Ontario has an opportunity to show global leadership,” as one study participant noted. With so much global competition, Ontario also faces the prospect of becoming an “also-ran”.

Many of the province’s challenges have been documented in this report, but some of the largest have not been mentioned as they are part of Ontario’s broader political and geographic context. One is the growing trend towards NIMBY (not-in-my-backyard) reactions to the next generation of environmentally friendly development, including wind-farm siting and transit expansion³⁸. The other is the abundance of natural resources that underlie our standard of living. Canada arguably has the most resources per capita on Earth: the third-most fresh water³⁹, the second-most oil⁴⁰, and the second-most space in which to put garbage⁴¹. At the same time, Canada has only the 36th highest population. This means that market forces alone will not be enough to encourage the growth of businesses and technologies that will define the next generation of economic growth. Ontario must nurture its environment industry with smart regulation and a more cooperative public policy approach that relies on a new relationship with industry.

With the decline of its traditional manufacturing base, Ontario is moving into uncharted territory. While encouraging growth in our environment firms will not be a substitute for hundreds of thousands of manufacturing jobs, the environment sector is a vital asset that will enable our economy to change and compete with those around the world that are embracing the next generation of “green growth.” It is now time for action if Ontario is to take advantage of the opportunity that is presenting itself.

37 Sigmar Gabriel, German Federal Minister for the Environment, Nature Conservation and Nuclear Safety, “Germany as a Partner to Asia in the Business and Environment Sector”, March 6, 2009

38 <http://www.cbc.ca/technology/story/2009/02/10/ont-green-energy.html>

39 “Total Renewable Freshwater Supply, by Country”, <http://www.worldwater.org>

40 PennWell Corporation, Oil & Gas Journal, Vol. 106.48 (December 22, 2008)

41 As measured by surface area, Demographic Yearbook (2006), United Nations Statistics Division

Appendix

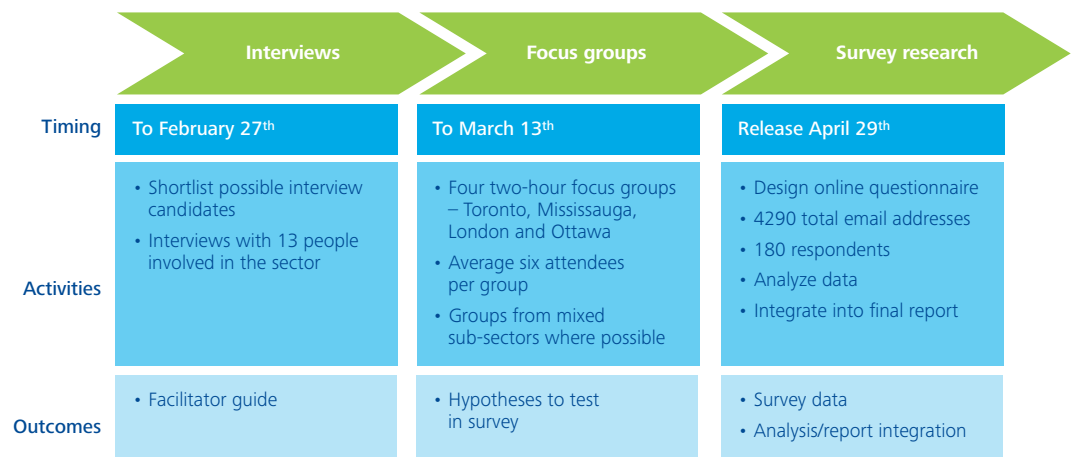
Appendix I. Methodology

The approach was divided into three phases. In the first phase, we began with a series of 30-90 minute interviews with individuals who are involved with ONEIA and Deloitte and are working in the environment sector. This quickly expanded to include a total of 13 people across the Ontario environment sector. This then allowed the creation of a facilitator guide for the Focus Groups. Four sessions were held in each of Toronto, Mississauga, London, and Ottawa. These two-hour groups had a total of 26 attendees, allowing in-depth discussions to generate a hypothesis for the quantitative phase. The sessions were run in a directed free-form approach, which allowed the respondents to go on tangents that were of interest to them while still ensuring that a broad array of issues was covered.

An in-depth 30-minute online survey was developed requiring 125 total responses⁴². The survey went live on March 19th and closed on April 8th. The core questions in the survey had about 180 respondents. The number of responses by question varied from 151 to 271, with the response rate to questions declining as respondents answered the final questions in the questionnaire.

Only selected results are highlighted herein. A full breakdown of the results can be found at www.oneia.ca/publications.php

Research design



⁴² Note that some responses were related to the industry's needs from an industry association such as ONEIA and are not referenced herein.

Appendix II. Selected definitions

Term/Abbreviation	Definition
Brownfield remediation	The cleanup of abandoned or underused land that may be contaminated in some way. Much of this land lies in former industrial sites located in urban areas. It often lies unused because the cost of cleanup is greater than the value of the land for redevelopment.
Certificate of approval (C of A)	A legal document issued by the Ontario Ministry of the Environment that permits and controls the manner in which activities are carried out (e.g., waste management systems).
Environment industry (Ontario)	The Ontario Environment Industry is made up of organizations or divisions of organizations based in Ontario – or with substantial operations in the province – whose primary business is the production, provision or development of environmental products, services, or technologies.
Landfill tax	A tax that is applied to increase the cost of landfill.
Life cycle management	Life cycle management (LCM) is about minimizing environmental burdens throughout the life cycle of a product or service. The life cycle includes all activities that go into making, using and disposing of a product ⁴³ .
Outcomes-driven regulation	Regulation that defines an end-goal objective, rather than an input. For example, outcomes-driven regulation about effluent might define the PPM (parts-per-million) for a given contaminant, whereas an inputs-based approach might define a particular process or scrubbing technology to reduce the amount of the contaminant.
Tipping fee	The rates charged to put waste in landfill, usually expressed in \$/tonne.
Environmental products and services	Environmental goods and services are used to measure, prevent, limit or correct environmental damage (both natural or by human activity) to water, air, soil as well as problems related to waste, noise and ecosystems. They also include clean or resource efficient technologies that decrease material inputs, reduce energy consumption, recover valuable byproducts, reduce emissions and/or minimize waste disposal problems.

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