2014 CANADIAN CLEAN TECHNOLOGY INDUSTRY REPORT

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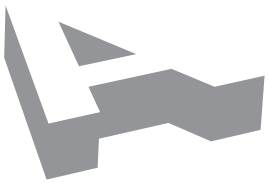

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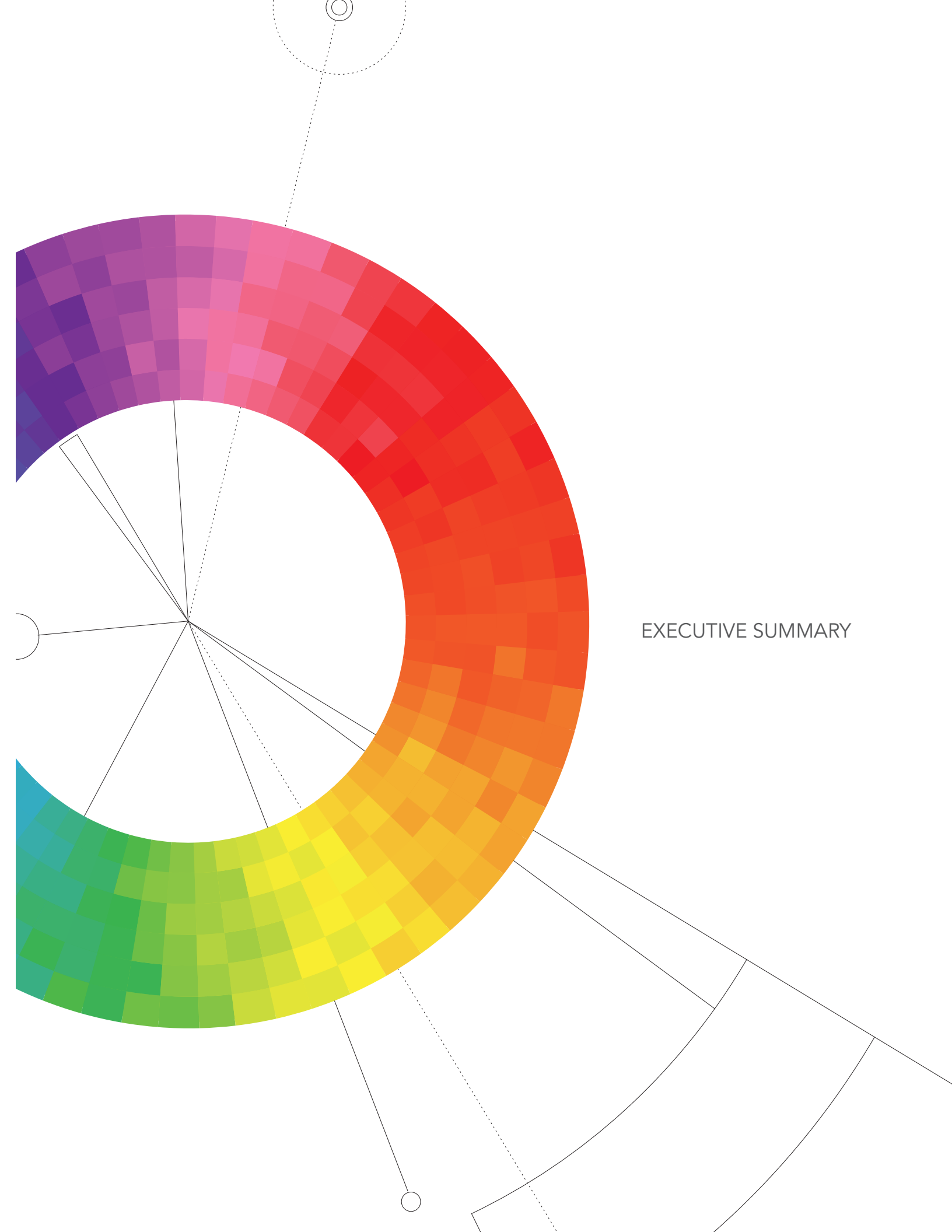

EXECUTIVE SUMMARY

A. Introduction

More people than ever are taking note of how clean technology in Canada is on the rise and growing. Clean technology is already a calling card for Canada. It reflects our values and our ability to invest in sustainable innovation, build companies and create good jobs. The *2014 Canadian Clean Technology Industry Report* (2014 Report) continues to chart the industry's integration with Canada's established industries as well as around the world. Progress and growth continue. Companies are taking action and winning in global markets where there are mounting signs of trade liberalization. To win, companies are creating new career paths that combine skill sets as diverse as engineering, international business development and communication. Canada is building an industry that boosts productivity at home and grows trade abroad. It's time to both highlight and capitalize on Canada's clean technology credentials.

People working in the industry are building companies in many diverse fields. Innovations such as green chemistry to make safer the glue that is used to bind particleboard for flat pack furniture; enzymes that mimic our lungs to filter out C02; and processes that transform greenhouse gases into stronger concrete to build greener buildings. Others are finding solutions to clean up contaminated land and water, to store energy for use during peak demand in the form of hydrogen, and to develop ships and locomotives that operate using compressed natural gas as a cleaner alternative to current fuels. All are Canadian enterprises with a range and diversity that is breathtaking.

What unites these innovators is a single *why*: to solve problems to do with the air, water and earth through know-how and investment. They are dedicated to building companies that protect our environment and grow our economy. This report concerns itself with the people working in the growing number of businesses that are solving these difficult problems. These people and their companies are held to many rigorous standards, but four challenges dominate: attracting and retaining the people needed to compete against the best, delivering value to customers through proprietary solutions, attracting capital, and making a return for shareholders.

The 2014 Report uses a combination of primary and secondary research to show how Canadians are investing their energy and talent into this emerging industry. Now in its fourth annual edition, this report describes the industry both through its ten constituent sectors, and in aggregate. It tracks how clean technology is becoming a foundational base for the productivity and growth of other industries as well as a sector in and of itself. The research for the 2014 Report was conducted in the fall of 2013, and companies reported the results for 2012 and their priorities for 2013.[i] We also look at the industry's relationship to the Canadian economy overall and why continued growth presents an opportunity for Canada at a time when building new industries matters. The credentials are impeccable, the skills are in place, but we must work to remove any structural barriers to growth, as we have done in the past for other industries.

Building on the groundwork laid by the *2010 SDTC Cleantech Growth & Go-To-Market Report* and both the *2011 and 2013 Canadian Clean Technology Industry Reports*, the 2014 Report's findings show that the Canadian clean technology industry continues to make strong contributions to Canada's economy. It has shown resilience in the face of a fragile global economic recovery, and is posting increasing exports, revenues and employment while continuing to invest vigorously. Many of the successes are small and medium sized firms, creating jobs for Canadians right across the country.

Starting in 2009, as part of this primary research, we created a catalogue of activity for a number of disparate businesses across Canada. Five years into this research, patterns are emerging consistently and it is now possible to support the following two core hypotheses:

1. Just as the aerospace and automotive industries strengthened the economic fabric of Canada over the last fifty years by connecting people to markets and their jobs, the clean technology industry is strengthening the economic fabric today through improved domestic productivity and Canadian exports of products and services to growing global markets.

2. Across all resource sectors as well as infrastructure, electricity, buildings and manufacturing here in Canada, there is greater integration of clean technology into current business practices, saving money, using natural resources more efficiently and improving environmental performance.

This Executive Summary provides a high-level overview of the detailed analysis contained in the *2014 Canadian Clean Technology Industry Report*. It starts with setting a challenging goal for the sector: That of building a $50 billion Canadian clean technology industry by 2022; one which would attain a share of global markets which is consistent with Canada's share of global trade. To build a globally competitive multi-billion industry, we will need to set goals and targets at many levels. Among them would be to build at least 20 Canadian clean technology companies that have attained $100 million in revenue and can become companies that attract global customers and capital to scale to $500 million and $1 billion annual revenue milestones.

The Executive Summary will also remind us of the fundamentals in the sector – what is clean technology, its ten sub-sectors, and how Canada is growing more competitive in each area. It also explains how the research defines a clean technology company, the global landscape, Canadian industry performance, and reviews the key facts about the sector. The Executive Summary comprises:

- Clean technology – seeing into the short, middle and long distance
- With vision clean technology can strengthen Canadian exports
- Getting ready – global markets for clean technology are moving towards liberalization
- Recommendations
- 2014 Report contents

B. The Goal

Market share is one of business's core measures. We have adapted this key measure to Canada's clean technology industry as a whole, and present Canada's global market share is part of this report. To put the industry market share in context, Canada's economy is two percent of the global economy. As a trading nation, Canada punches above its weight and holds 2.6 percent of global trade. What is more, Canada has demonstrated that it can garner its 'fair share' of global markets. Canada's civilian aerospace industry operates in a $380 billion global market, and Canada's global share in 2010 was six percent at $22.4 billion. This accomplishment reflects patient investment in the development of the aerospace industry. A $50 billion Canadian clean technology industry by 2022 would represent two percent of global market share. The target remains the same, but the year has been pushed out from 2020 to 2022 to reflect the continued fragile global economy. To build a globally competitive multi-billion industry, we will need to focus on how to build at least 20 Canadian clean technology companies that have attained $100 million in annual revenue as quickly as possible.

The findings of this research continue to support the assertion that Canada should be aiming for nothing less than two percent of global market share. Why? Three factors underpin this assertion:

1. the size and growth of global markets
2. the proven growth of Canadian clean technology companies
3. the opportunity of leveraging the Canadian clean technology industry to improve the competitiveness of Canada's established industries

After five years of study and four annual national reports, the patterns continue to suggest that two percent of global market share for clean technology is within Canada's grasp. However, we will need to bring the kind of patient capital and patient policy that aerospace and other sectors have enjoyed for the last several decades. It's time to make room for the new kids on the block.

What is clean technology and what is a clean technology company?

Clean technology is much more than technology that produces renewable energy from the wind and the sun. Ten clean technology sectors form the basis of this report. These ten sectors are organized under three market segments — Upstream, Downstream, Water & Agriculture — in the Clean Technology Classification presented below. In the 2014 Report, to better reflect the shape of the industry, two sectors were combined and one sector was added.[ii]

For the purpose of this report, a clean technology company is defined as a company with proprietary technology or know-how that addresses one or more of the markets below:

Trends in market dynamics continue to have an impact on the distribution of the revenue shares by sector. Highlights in the 2014 Report include:

- As predicted in the 2011 and 2013 Reports, sectors that support energy conservation and increased productivity are growing quickly. These are the Downstream sectors which address how earth, air and water are used. Combined they have increased their share of revenues from 66 percent in 2011 to 72 percent in 2012, which is the baseline year for the 2014 Report. This growth demonstrates the potential of clean technology within established sectors such as industrial and extractive processes, transportation and infrastructure.

- The Upstream sector, populated by the Power Generation and Biorefinery Products, has seen its share diminish from 21 percent in 2011 to 15 percent in 2012. Growth in the Power Generation sector continues to be strong. Finally, the Water and Agriculture sectors accounted for 13 percent of revenue in 2012, showing consistency with previous reports.

The baseline of firms referred to in this report reflects our engagement with stakeholders and investors across Canada. The cohort of companies is continually updated. The majority of new additions are companies in the pre-revenue and early commercialization stages, which suggests that incubation of new companies continues to occur in the industry. The 2014 Report provides company profiles that summarize the business of clean technology companies in Canada, including information on each company's business, accreditations, products, service, customers and governance.

c. The Global Clean Technology Landscape and Canadian Industry Performance

Global markets for clean technologies are still expanding and emerging; industry definitions continue to evolve. The global market demand for clean technology remains an estimated $1.1 trillion in 2012, the baseline year for this report, and we have estimated that it will grow to $2.5 by 2022 based on a compound annual growth rate (CAGR) of nine percent. It bears emphasizing that these markets are not only for renewable energy wind and solar project finance - the industry is much more.

Canada has built its clean technology capacity into a $11.3 billion industry. In the face of the continued slowing US economy and a fragile global economy, the Canadian clean technology industry grew nine percent year-on-year from 2011 to 2012 – down from 17 percent reported in the 2013 Report. For comparison, industry revenues for the aerospace industry were flat in 2012. At the current growth rate the Canadian clean technology industry will become a $28 billion industry by 2022. This is smaller than the 2022 goal of $50 billion, which would represent two percent of global market share.

Based on revised methodology, direct employment in Canadian clean technology companies exceeded 41,000 people[iii] in 2012 (excluding indirect and imputed effects). 2011 to 2012 year-over-year employment growth was six percent, down from 2010 employment growth of eight percent. The average clean technology company employs 58 people. Given current employment growth of six percent annually, industry employment will grow to 75,000 by 2022.

At $11.3 billion, Canada's share of the global market is just over one percent. If the industry's growth trajectory continues at its current pace of ten percent CAGR from 2010 to 2012, the Canadian clean technology industry will grow its share of the global market to slightly more than one percent of the over time.

2014 Canadian Clean Technology Industry Report Selected Facts[iv]

- The Canadian clean technology industry has over 700 technology companies, comprised primarily of SMEs, operating in ten sectors and in every region of Canada.
- At an average company age of 16 years, the industry continues to gain traction as a significant contributor to the Canadian economy in terms of revenues, employment and exports. In 2012,
    - industry revenue was an estimated $11.3 billion, representing one percent of the global clean technology market
    - clean technology companies directly employed 41,100 people compared to 38,800 in 2011 (based on revised methodology)
    - size in terms of employment was comparable to a number of industrial sectors including non-metallic mineral products
    - export revenues for the clean technology industry were approximately $5.8 billion, with 42 percent of export sales coming from non-US markets
    - over 74 percent of Canadian clean technology companies were exporters, and 89 percent anticipate exporting goods and services by 2015
- The overall industry showed steady growth in 2012 even as US and EU markets remained slow. Revenues increased ten percent on a compound annual growth rate (CAGR) for the 2010 to 2012 period and 9 percent year-over-year for 2011. This was a decline from 17 percent year-on-year growth from 2010 to 2011. Based on a mid-growth scenario of 11 percent CAGR and high-growth scenario of 19 percent CAGR, projected industry revenues range between $32 billion and $65 billion in 2022.
- Clean technology companies are focused on global markets:
    - 52 percent of revenues in 2012 came from sales outside Canada, 22 percent of industry revenues came from non-US markets
    - US and EU markets are the most actively engaged, but Brazil, the Rest of South America and China are gaining greater interest as export markets

- Industry employment grew six percent (CAGR) from 2010 to 2012, and growth rates suggest industry employment can total between 60,800 and 116,600 by 2022. Twenty percent of employees are aged 30 or less.
- These same companies are driving innovation, investing over $1 billion in R&D in 2012 and $5 billion cumulatively from 2008 to 2012 of which $3.5 billion were from SMEs. For 2012, this R&D-intensive industry was defined by:
    - small and medium-sized clean technology companies whose R&D investments represent 78 percent of the industry's total
    - per company R&D expenditures that averaged $1.6 million in 2012, up from $1.5 million in both 2010 and 2011
    - industry R&D (as percentage of revenue) of ten percent, a rate similar to other R&D intensive industries such as biotechnology, pharmaceuticals and ICT
    - estimated industry-wide R&D expenditures that were greater than the combined R&D spending by natural resource industries (oil and gas extraction, mining, agriculture, forestry and fishing), and only $200 million less than the aerospace manufacturing sector
    - companies that are committed to protecting IP, spending on average $65,000 annually on IP registration in seven countries
- Investments in Sales & Marketing are consistent with investments in Research & Development for this industry. On average companies are investing nine percent of revenues in Sales & Marketing, and this varies according to a company's stage and size.
- Clean technology companies also require significant capital to scale up from early R&D stages to the later market volume stage.
    - 74 percent of the industry's companies are at product commercialization stage or later, when access to debt and project finance becomes more critical.
    - Venture capital is a significant source of equity funding in each of the four commercialization stages, contributing 43 percent of all equity reported. Conversely, crown corporations only contributed five percent of all equity reported, and international financial institutions provided negligible equity investments and debt.
    - A combination of venture debt and issued debentures contributed 83 percent of the debt funding received by companies in the early commercialization. This combination decreased to 67 percent in early revenue and 21 percent during commercial scale-up. In contrast, debt funding from Canadian commercial banks attained 65 percent for companies in commercial scale-up.

D. Clean Technology – Seeing into the Short, Middle and Long Distance

Now that we have a snapshot of the fundamentals, let's look at the evolution of the clean technology industry. The Report is keeping tabs on many factors within many companies across ten different sectors. Why does this help us understand the industry better? The answer is twofold.

First, it is hard to predict the success of companies in new industries. To see patterns and trends emerge breadth is important, so the Report looks at the national picture. Second, depending on where they sit, people need different information. Investors keep score at the level of their investments. Company managers assess what it takes to deliver growing returns for shareholders. Elected and government officials keep track of matters in their jurisdictions. Change in business conditions is accelerating. Seeing the connections between these score cards will help ensure that we navigate through change as the sector grows and matures.

To see how these score cards are connected, 'trifocal' glasses are a useful metaphor. If you look through the top lens of trifocals, you see clearly what is ahead. Here we can see the connection between the economy writ large and clean technology. Clean technology companies are building solutions for challenges faced by large, established industries such as oil & gas, transportation, forestry, mining, agriculture, infrastructure and utilities companies, to name a few. These solutions drive new economic, environmental and resource efficiencies into the heart of traditional business models, improving long-term productivity.

When we look into the middle distance through the centre lens of our trifocals, the direct economic impact of more than 700 companies comes into focus. Among the 'scores' here are trends regarding exports and employment, as well as investment in R&D and Sales & Marketing.

Finally, when we focus through the bottom lens of the trifocals, we see individual companies. This is where we can see how companies, as new businesses, are making efficient use of scarce investment and business resources. Company score cards are the result of dozens of tough decisions focused on delivering returns to shareholder through superior solutions for customers. Like all business, companies are made up of people. The people who work in the Canadian clean technology industry do so based on a very personal combination of the three fields of vision.

At the core of this report, and those that preceded it, are the 156 participating companies, including 16 public companies and 140 private companies. What brings companies to participate in this research?

Because their decisions make the difference between whether a company thrives or struggles, meets payroll or not, managers of companies are constantly calibrating against their peers. This report makes the comparison possible, especially for privately-held companies. As a result, dozens of companies share their confidential

finances and plans so that they can benchmark themselves against their peers in this Report. This takes courage; it requires both reporting on achievements and reflecting on hard choices for the future. And it makes the primary research in this Report unique in the sector. Through this sharing and benchmarking we can draw lessons on how to build new industries in the 21st century.

The 2014 Report points to two very interesting findings about growing industries. First, technology-based industries show consistency in their R&D profile over time. *Figure ES.2 Business Enterprise R&D (BERD) 2009 to 2012, Selected Resources and Manufacturing Industries* suggests that private sector investment in Canadian industries declines over time in absolute terms once industries are established. As this is an emerging industry and still establishing its competitive position, R&D investment by clean technology firms in Canada continues to grow.

The second pattern to emerge is around employment. In *Figure ES.3 Comparison of selected Canadian Industries 2012 Direct Employment*, a number of industries have attained employment in the range of 20,000 to 60,000. Clean technology is one of them, with employment in the middle of this range. The rising R&D investments suggest that investors expect these companies to continue to grow, although the ratio of R&D investment to employment growth remains to be seen.

If we look at where in the economy clean technology companies operate, we see a broad array of sectors. Customers for these companies operate across the range of established industries. (See *Figure ES.4 2012 Distribution of Clean Technology Companies, by Sector*). Based on our research, we have added Extractive Processes & Products to Canada's clean technology sectors, making this an industry of ten complementary and dynamic sectors consisting of more than 700 companies.

Resource efficiency – whether for water, electricity, municipal waste, land or raw materials – is becoming a core value in businesses because these practices save money, and they improve both productivity and the bottom line (in addition to the environmental bottom line). The economics of clean technology are merging with the economics of both advanced and emerging economies.

Finally, we need to see where in Canada clean technology companies are located. For a number of years now, the companies that make up the industry have been distributed across Canada, as a function of GDP. (See *Figure ES.5 2012 Distribution of Clean Technology Companies, by Region*).

E. With Vision, Clean Technology Can Strengthen Canadian Exports

Employment and investment in R&D are clearly both important measures of an industry. However, a fascinating thread in the clean technology tapestry is their global focus and the strength of their exports.

If we look through the top lens of our trifocals and connect Canadian clean technology exports to Canada's economy, we see that in 2012 Canada exported $428 billion of Domestic Merchandise, that is to say, goods that were grown, produced or manufactured in Canada as well as commodities of foreign origin that were transformed in some way in Canada. With major changes in global markets, national economies are in flux. Canada's is no exception. Exports are a microcosm of these changes.

If we dig a little deeper into the make-up of Canadian export capacity, it appears that 2008 may have marked a peak in the natural resources export cycle for Canada. Natural resource exports declined from the 2008 peak of $233 billion to $210 billion 2012. At their peak in the year 2000, manufactured goods exports accounted for two-thirds of Canadian exports, or $273 billion. In 2012, manufactured goods exports were $245 billion, $27 billion (11 percent) below their peak. However, it is interesting to note that manufactured goods other than automotive and aerospace attained $173 billion in 2012 (a year when the Canadian dollar was trading high), nearly matching its year 2000 peak. In 2012, the news was less positive in automotive and aerospace, whose exports were $26 billion less than the peak of $99 billion in 2000. The clean technology industry is part of the $173 billion growth story of Canada's export of manufactured goods from outside the automotive and aerospace sectors. (See Figures ES.6 Resource-Related and Non-Resource Related Domestic Exports 1990 to 2012 and ES.7 2000 Peak and 2012 Resource and Non-Resources Related Domestic Exports)

For ten years, Canadian exports have been trending toward equality between natural resources and manufacturing-based exports, with each accounting for approximately half of exports in 2012. There would now appear to be downward pressure on demand for natural resources. Two factors are relevant. First, China intends to restructure its economic growth toward a consumer-based economy. Second, newly accessible sources of energy globally may change the pattern of global demand. Building Canada's clean technology industry can be part of growing Canada's export capacity in a period of shifting demand.

For some time now, economists have described the need for Canadian companies to export to markets other than the US.[v] This message has reached clean technology companies. In 2012, Canadian clean technology sales to non-US markets accounted for *22 percent of industry revenues overall*. What is more, exporting is part of the industry's fabric, and not the domain of just a few companies. In 2012, three- quarters of clean technology companies were exporters, with more than half of revenues being generated from exports. Next year, all but 11 percent of companies plan to be generating some revenues from exports as the industry moves to generating *70 percent of industry revenues from abroad, in equal measures from US and non-US markets*.

Consensus appears to be building on the need to reinvigorate Canada's manufacturing and export capacity. In 2014 the International Monetary Fund stated that Canada may have lost significant manufacturing capacity: "We think that this kind of structural challenge from low productivity and a very high exchange rate over the past ten years may have done some structural sort of damage", said Roberto Carderelli, the IMF's mission chief to Canada.[vi] Canadian clean technology companies are building manufactured export capacity.

F. Getting Ready - Global Markets for Clean Technology Are Moving Towards Liberalization

The 2013 Report noted the emerging role accorded to environmental technology during trade negotiations. At the 2012 meeting of leaders for Asia Pacific Economic Cooperation (APEC) it was agreed that a subset of environmental goods be subject to minimum tariffs by all APEC members.[vii] Following this commitment to reducing tariffs, Canada announced in 2013 that it had fully implemented the tariff reductions. Other APEC Economies are also committed. In addition, during the 2013 APEC Economic Leaders' Meeting, the APEC Public-Private Partnership on Environmental Goods and Services (PPEGS) was established, with a view to using this new forum as a platform for enhanced dialogue on trade in the environment sector. The first meeting of the PPEGS should be held in 2014. This creates a new level of awareness on environmental goods and services – and a major opportunity for Canada's clean technology companies.

The pace towards liberalization may be quickening. Early in 2014, an announcement was made by a number of countries, notably including China, building on the APEC leaders' agreement and announcing the intention to explore opportunities to build on a commitment to reduce tariffs on environmental goods by the end of 2015 within the World Trade Organization.[viii] It remains to be seen if Trans-Pacific Partnership discussions will follow suit.

To put these initiatives in perspective, in the mid-90's there was a similar global liberalization in trade of computer hardware. As a result, trade tariffs were reduced or eliminated. This change caused both a global restructuring in information & communications technology (ICT) manufacturing and an explosion in development of business software - a driver of productivity still today. Time will tell if liberalization will have as profound an impact on markets for environmental technologies as it did for ICT.

Just as Canada developed strategies for the automotive and aerospace industry at a critical time in their development, it would be wise to consider the appropriate response for clean technology. Added to the strength of its domestic economic and jobs performance, the clean technology sector's potential in emerging liberalized trade drives the case home further.

While this report clearly demonstrates the strong domestic and global opportunities of clean technology, and as its story becomes more widely known, it is important to remember that we have been here before. As noted in the 2013 Report, over the last twenty years we have held and then lost leads in biotechnology, cable and satellite technology, and others as well. Canada has a small domestic market and a wise reluctance to implement industrial strategies that foster commercialization and build scale among industries that arise from domestic IP. Clean technology can overcome these challenges, but it requires both the private and public sector to embrace the urgency that is required to avoid being left behind in a global race – again.

Elsewhere, countries such as Germany, Japan, China and South Korea are moving with whole-of-government conviction, based on their assessment of market opportunity. These countries are building new business and policy tools and deploying every lever at their disposal, including deeply integrated international and domestic policies. It's time for Canada to take note.

G. Recommendations

The 2013 and 2014 Reports provide the basis of engagement with stakeholders for the development of recommendations under each of the following headings:

- **Realization of economic and productivity potential of the clean technology industry:** Make clean technology a cornerstone of Canada's policies for economic productivity, energy, innovation, the environment and exports to both advanced and emerging economies. Clean technology is Canada's first new industry of the 21st century. Current growth rates suggest it will be soon comparable to established innovation-based manufacturing sectors.

- **Development of a domestic market for clean technologies:** Foster access to public and private domestic markets by globally competitive companies. Create private sector 'on-ramps' to established industries in natural resources and industry to improve their competitiveness, while at the same time strengthening this new industry. Consider how this sector can contribute to infrastructure built through public-private partnerships.

- **Expansion of clean technology exports by building on the Global Markets Action Plan:** Includes branding of the industry; improved access to multinational buyers through leverage such as EDC pull credit facilities; industry engagement in trade liberalization discussions; access to markets by new treaties that address the key concerns such as intellectual property rights during trade negotiations; investment in cooperation within the environmental chapter of future bilateral trade discussions with emerging economies.

- **Development of financial markets specific to clean technology:** Accelerate the development of financial markets for equity, export and buyer finance as occurred in Canada for global mining finance. Risk insurance to help unlock debt finance at scale may be required to stimulate private sector innovation in financial instruments for this sector.

- **Engagement with international financial institutions (IFIs):** Invest in the

capacity to finance and deliver feasibility studies that provide early visibility into projects. Build on hard investments in IFIs with soft investments in greater coordination among government departments and levels. Consider required new institutional capacities to deliver international development finance.

- **Establish an expectation that large Canadian companies engage with innovation-based, export-focused globally competitive Canadian companies:** When large Canadian companies procure innovations from Canadian innovation-based companies, their decisions can transform companies. Early-adopting multinational customers are vital to the long term success of emerging companies. Their early adoption will attract both investment and clients elsewhere in the world. Just as important, evidence suggests that when this virtuous cycle starts at home, companies grow and scale up to become valuable partners to help strengthen the competitiveness of corporations in the long term.

Our credentials are impeccable. The story is strong and compelling. But it must be matched by a desire of all stakeholders to make the ending of the story as exciting as its beginning.

H. 2014 Report Contents

The 2014 Report builds on five years of research conducted at the firm-level, on a national cohort of more than 700 companies. This research is undertaken with a view to understanding if publishing aggregated firm-level economic evidence can play a role in economic decision making and its impact on the business environment, the performance of individual companies and the economic outcomes in the sector.

Clean technology represents an important economic opportunity for Canada through its impact on our established industries, and as an industry in and of itself. Early indications of the industry's foundational economic impact were highlighted in previous clean technology industry studies. The clean technology industry's broad applications and capability to underpin advancement of many established industries became further evident during research conducted in 2012. It is recognition of the industry's potential role within the broader economy that has shaped the 2013 and 2014 Reports. Thus the 2014 Report seeks to inform readers not only of the present but also of future markets. The 2014 Report supports decision makers who see an opportunity to strengthen established industries while enabling the creation of a significant innovation-based, export-dominated Canadian clean technology industry. It supports established industries who intend to diversify their supply chains as well as trade professionals who are in market and engaged with global corporations who seek clean technology solutions.

Taken together, the 2010 SDTC Cleantech Growth & Go-to-Market Report and the 2011 Canadian Clean Technology Industry Report provided the first comprehensive view of Canada's clean technology industry. This was accomplished through the following elements in the 2010 Report:

1. Canadian industry characterization through per sector views of number of companies, technology maturity, origins of intellectual property, R&D investment and early adopter markets

2. 2009 industry and sector actual and forecasted growth rates to enable benchmarking of private and public company performance

3. 2009 industry export accomplishments and forecasts

4. Early adopter market attractiveness by sector and region

5. High growth company performance benchmarks and best practices

To which the 2011 Canadian Clean Technology Industry Report added:

6. 2010 and projected industry revenue and employment

7. 2010 global market sizes and growth rates for clean technology sectors, as well as Canadian sector global market shares to 2020

8. US and non-US export accomplishments expressed by country and export region

9. Average firm-size by revenues and employment and company age

10. Canadian clean technology SME engagement with International Financial Institutions

11. CEO sentiment on market opportunities, barriers and Canadian R&D programs

The *2013 Canadian Clean Technology Industry Report* built upon the trend-lines for items 1 through 11 above, and published in ten chapters with sector specific information on:

1. Sector size by revenue, growth rate and comparison to global sector markets

2. Commercialization profile including number of companies, top go-to-market channels

3. 2011 exports and export countries of interest, percent of companies exporting

4. R&D investments by size of firm and cumulative over time

5. Investment in intellectual property patenting and number of countries in which patents are applied for

6. Employment and human resources skills gaps

7. Incubation ratio of early stage to later stage companies

8. Industry revenue high, medium and low growth scenarios

9. Industry employment high, medium and low growth scenarios

The 2014 Canadian Clean Technology Industry Report builds on items 1 to 9 above, and publishes both for the industry as a whole and in ten sector chapters per sector information on:

10. Expanded company profiles including company board membership and expanded information on value propositions and customers

11. Percent of employees that are aged less than 30, percent of employees that are engineers and percent of employees that are foreign-based.

12. Top five countries by region and by share of revenue

13. Top five countries for active exports

14. Top five countries of interest for exports

Industry-wide information is published in Chapter 2 on:

15. Company performance benchmarks and best practice investments in Sales & Marketing and R&D (income statement "comparables" by size of firm)

16. Current and forecasted revenue source by domestic, US and non-US sources

17. Current and forecasted break-down of non-US exports

18. Actual and planned sources of equity

19. Actual and planned sources of debt

Also in Chapter 2 of the 2014 Report, cross industry comparison to the clean technology industry are published on:

20. Direct Employment comparison to selected industries

21. Business Enterprise Research and Development comparison to selected industries

Because of their continued relevance, five extracts from the 2013 Canadian Clean Technology Industry Report have been included in the 2014 Report. They are the following:

- Reproduction of graphical information: CEO Sentiment on Strategic Intent from the 2010 and 2011 Reports
- Reproduction of Editorial Content: Business Development and Sales Professionals Have Different Roles in Global Innovation-Based Companies
- Reproduction of Reference Framework: Commercialization Disciplines
- Reproduction of graphical information: Benchmark of Clean Technology R&D as a percentage of revenue versus of Other Industries
- Reproduction of graphical information: Average early and later stage venture capital investment per company, selected sectors: Canada and US 2000 to 2011

I. As you read on...

What do we believe should be in the back of your mind as you study this report and delve into the richness of the data it contains?

We certainly suggest that the in-depth analysis delivered by this 2014 Report will provide you with a deeper understanding of the sector and its opportunities. The scale, depth and diversity of the credentials of the industry should be impressive to you. That in itself is reason enough to look at the industry with both hope and expectation. But there is also much to ponder upon and to consider as investors, policy makers, business leaders and citizens about what we all need to do in order to fulfill that potential.

As we look forward to the next few years, it is quite clear that Canada and Canadians can make a significant difference in the growth of this sector through the application of relatively simple, but powerful, policy levers. As the Report indicates, we can and should build a significant economic sector, relevant across the country, through coordinated and patient policies and wise investment.

With the steady growth of clean technology companies and strong fundamentals that underpin the industry, there is no underlying reason why Canada should not achieve a two percent global market share in clean technology Canada can create a $50 billion industry by 2022, to the immense benefit of our economy and society. To build this globally competitive, multi-billion industry, we will need to nurture at least 20 Canadian clean technology companies that have attained $100 million in revenue. This was our clarion call four years ago when the first research was completed. It remains a worthy goal for Canada today. We have made a powerful beginning and set a wholly achievable goal. Are we now ready to take the next steps?

END NOTES

[i] Unless otherwise stated the quantitative information presented in this report is for 2012. Qualitative information should be seen to reflect priorities in 2013.

[ii] In the 2014 Report, two sectors were combined and one sector was added. Combined are Recycling & Recovery with Remediation & Soil Treatment. Extractive Processes & Products was added.

[iii] The employment methodology was revised for the 2014 Report. See Chapter 1.

[iv] Unless stated otherwise these facts are for 2012 which is the baseline year for this report.

[v] Tiff Macklem, Regearing Our Economic Growth, Queen's University, January 10, 2014

[vi] Nirmala Menon, Wall Street Journal, February 3, 2014

[vii] 2012 APEC Leaders' Declaration, Annex C, List of Environmental Goods, September 8-9, 2012

[viii] Reuters, Major Trade Powers Seek Free Trade in Environmental Goods, January 24, 2014

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