

This report is the first in a series addressing the top sustainability issues in Canadian business.



Report on Business & the Environment:  
Manufacturing 2011

# Shifting markets, shifting mindsets

Creating value through cleaner & greener manufacturing



RBC Royal Bank®

# Rethinking industry

## Leading change for a stronger, more sustainable Canada



In cities and towns across Canada, an estimated 30,000<sup>1</sup> parcels of land lie unproductive and abandoned, contaminated by commercial or industrial activity, posing potential risks to human health and the environment. Symbolic of an earlier age of industrialization, these “brownfields” represent an era when issues related to the environment were not high on the list of considerations for industrial decision-makers.

Fortunately, these brownfields are being remediated, in many cases with the support of RBC® financing. Cleaned up and decontaminated, these once toxic lands are being redeveloped, positively improving the health and economies of local communities throughout Canada – a potent example of the potential for positive change.

As these brownfields are rejuvenated, one cannot help but feel enormous change is well underway. Old mindsets are giving way to new perspectives, and how products are designed and made matters. Canadian manufacturing – the beating heart of our local and national economies – is an essential part of the environmental solution as we transition to a more sustainable, less carbon-intensive future. And for those companies who take on the sustainability challenge, the potential reward will be substantial competitive advantage through new market opportunities, lower costs and reduced risk. More than ever, pursuing environmental sustainability is good business strategy.

RBC is pleased to have partnered with CME, the voice of Canadian manufacturers, on this *Report on Business & the Environment*, aimed at CEOs and senior decision-makers of manufacturing enterprises across Canada. We want to inspire you to lead this transition to green manufacturing, not follow in competitors' footsteps. Your success and innovation will stimulate economic growth, enable local communities to thrive and protect Canada's ecological prosperity for generations to come.

As we have seen with the legacy of the brownfield, things can and do change. Whether you are seeking financing for an energy retrofit or a new “green” product or service, we would be pleased to share our advice and expertise. RBC welcomes the opportunity to be your banking partner as you lead your organization down the path toward environmental sustainability.

A handwritten signature in black ink, appearing to read 'A. Bolger', written in a cursive style.

**Andrea Bolger**  
Head, Business Financial Services  
Royal Bank of Canada

<sup>1</sup> National Round Table on the Environment and the Economy, 2003. *Clean up the Past, Building the Future: A National Brownfield Redevelopment Strategy for Canada.*

# The green edge

It matters to your business — and the environment



Recently, the owner of a Canadian, niche-market metal fabrication company talked with me about how and why he was focusing on becoming more energy efficient. A decade ago, energy costs represented eight per cent of his sales, he said. About two years ago, energy costs as a percentage of sales had more than tripled. “You don’t have to do the math to see the challenge we faced,” he said. In an effort to bring costs down, his company invested a significant amount of time and money in developing and implementing more energy-efficient processes. These actions reduced the company’s carbon footprint because of lower demand for carbon-intensive energy, but “going green” was not the primary driver behind the decision: “I did it for survival,” he said bluntly.

Knowing his situation as well as I do, he could not deny that for his company, improved energy efficiency made perfect business sense. Reducing the cost of energy was an enormous benefit, particularly during recent hard times.

This member’s story is a good example of how, for manufacturers, new and improved products, processes, and technologies can lead to a more environmentally sustainable business on one hand and deliver significant bottom-line benefits on the other.

Going green can help drive sales revenue as well as reduce costs. Businesses succeed when they become an important part of their customers’ success. With consumers, businesses and governments around the world paying greater attention to reducing their environmental footprint, Canadian manufacturers and exporters are finding significant new business opportunities in providing the necessary solutions that help their customers address environmental concerns.

Given the economic climate of late, Canadian manufacturers and exporters can be forgiven for choosing to focus on survival over going green. But, I do not think that businesses necessarily have to choose one objective over the other. Today, manufacturers have to focus on the twin objectives of environmental and financial sustainability. I believe Canadian manufacturers will continue to find compelling competitive advantages in going green to ensure that environmental sustainability remains a strategic priority.

This report highlights some of the opportunities that manufacturers have to create and maximize value by capitalizing on the business case for going green. It focuses on the benefits of lower risk cost savings and new market opportunities. And, it identifies some best practices, which are important because the big question is really not whether going green makes sense, but how manufacturers can execute on new business strategies in which environmental sustainability plays a pivotal role.

Ray Anderson, the founder of Georgia-based InterfaceFLOR, a pioneer in sustainable manufacturing, calls this challenge “climbing Mt. Sustainability.” Of course, like climbing any formidable mountain, the challenge of change is never easy.

Our job, as your industry association, is to support you on this journey to green. By sharing best practices, our aim is to engage and inspire Canada’s manufacturers to move beyond energy efficiency toward a more comprehensive and innovative approach to solving environmental sustainability, creating long-lasting competitive advantage along the way.

A handwritten signature in dark ink, appearing to read "Jayson Myers". The signature is fluid and cursive, with a large initial "J" and "M".

**Jayson Myers**  
President & CEO  
Canadian Manufacturers & Exporters

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# About this report

**REPORT ON BUSINESS & THE ENVIRONMENT: MANUFACTURING 2011** is the first in a series aimed at helping leaders of Canadian organizations in different sectors better understand and benefit from the risks and opportunities presented by the environmental sustainability challenge. This Manufacturing 2011 Report is the product of collaboration between two partners – RBC and CME – in association with ThinkSustain® Consulting:



RBC® provides personal and commercial banking, wealth management, insurance, corporate, investment banking, and transaction processing services on a global basis. We serve more than 15 million personal, business, public sector, and institutional clients through offices in Canada, the U.S. and 46 other countries. We are committed to proactive and prudent management of the environmental aspects of our business and have had a corporate policy on the environment since 1991. We believe that the preservation of the environment is fundamental to the sustainability of our communities, clients and company. More and more Canadian companies are realizing the significant benefits to be gained by building environmental sustainability into their businesses. To support our clients on this journey, we have created many resources available at [www.rbc.com/business-advice](http://www.rbc.com/business-advice).



Canadian Manufacturers & Exporters (CME) is Canada's largest trade and industry association and has been the voice of Canadian manufacturers since 1871. CME represents more than 10,000 leading companies from all sectors of manufacturing and exporting activity across Canada – 85% of which are small- and medium-sized enterprises (SMEs). Our mandate is to promote the competitiveness of Canadian manufacturers and the success of Canada's goods and services exporters in markets around the world. To learn more, please visit [www.cme-mec.ca](http://www.cme-mec.ca).



ThinkSustain® Consulting is a Canadian-based boutique consultancy that helps organizations become more environmentally, socially and economically sustainable through strategic planning, communication and stakeholder engagement. For more information, please visit [www.thinksustain.com](http://www.thinksustain.com).



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# Designing a better business

## Prepare a strategic plan for a cleaner, greener and more profitable future

As a Canadian manufacturer, you are weathering a storm of challenges: unprecedented global competition, an abundance of changing rules and regulations, “Buy American” and other trade restrictions, and one of the deepest cutting economic recessions in seven decades. With ingenuity and dogged determination, you are leading your organization through this turbulence toward greater organizational resiliency. During this time, however, your steely eyed focus on short-term survival has likely left little managerial bandwidth for long-term strategic or tactical thinking. It is always difficult to climb up into the crow’s nest in the midst of a storm.

With economic turbulence now calming, it is time to return to basics; to figure out where your company stands with respect to the market, your firm’s competitive strengths, and the risks and opportunities that lie ahead. Business as usual is not an option. It is important to take time to deepen your understanding of new tectonic market forces that are reshaping competitive horizons for your business. Consider how major shifts in market power, advances in technology, changing expectations on the part of consumers, governments and the general public will impact your business, your industry and other companies within your value chain. How can you bring new solutions to the marketplace? How can you reconfigure your processes to work smarter? What do you need to do to be better prepared to manage the new challenges and opportunities arising from recent shifts in markets and mindsets?

As you rethink your business strategy, pay attention to the risks and opportunities that are related to energy and the environment. The issues of climate change and environmental sustainability are already reshaping markets and mindsets in Canada and around the world. They are redefining expectations on the part of customers, investors, governments and the public at large. Energy and resource constraints are affecting your cost structure. And, environmental problems are opening the way for innovative solutions in the form of new products,

processes and technologies — all aimed at reducing our environmental footprints. How you respond to these issues will affect your competitiveness, your growth opportunities and ultimately, the bottom line for your business.

Like many executives, you are no doubt already feeling pressure to go green, both at home and at work — and for good reason. By most accounts, the environmental sustainability challenge we face is formidable. Energy and resources are consumed and waste is generated in everything that humans do. We humans — all 6.8 billion<sup>1</sup> of us — are exceeding the carrying capacity of this planet, using 50% more natural resources and natural systems than earth can provide.<sup>2</sup> If we continue our current rates of consumption patterns, say experts, by the mid-2030s we will need two planet earths to support our current lifestyles.<sup>3</sup>

Population growth will only compound the problem. In just four decades, we will need to provide food, shelter, jobs and freshwater for 2.4 billion more, including fast-growing middle classes in emerging economic power-houses such as India and China. Many of these individuals will create new markets as they aspire to emulate North American lifestyles while contributing to increased demand for finite natural resources including forests and arable land.

Meanwhile, mounting scientific evidence warns that humans are changing the earth’s climate by adding large quantities of greenhouse gases (GHGs) like carbon dioxide (CO<sub>2</sub>) to the atmosphere. Climate change is affecting many critical factors for healthy communities and businesses including water availability, air quality, crop yields and insect infestations. Whether you believe human activities have a big effect on the earth’s climate or not, the reality is that governments have begun the transition to a carbon-constrained or “low-carbon” economy, and this will have consequences for your business in terms of increased regulation.

<sup>1</sup> United Nations Population Division (UNPD), March 2009. *World Population to Exceed Nine billion by 2050*, Media Release.

<sup>2</sup> World Wildlife Fund, 2010. *Living Planet Report 2010*.

<sup>3</sup> *Ibid.*

Again, carbon-related costs are on the rise. But what of the opportunities that can be expected in the form of improved energy efficiency, lower carbon technologies and alternative energy development? Further, what risks and opportunities lie ahead as we adapt to climate change? A concerted effort to reduce human-made GHG emissions will not be enough to prevent some global warming as GHGs can and do remain in the atmosphere for decades after production, say experts. An increase in intensity and frequency of extreme weather events, flooding, droughts and forest fires are just a few of the climate change-related impacts already occurring in Canada<sup>1</sup>.

Given all of the above, how will we sustain economies and living standards as the earth's global population tips 9.2 billion in 2050?<sup>2</sup> This *is* the crux of the sustainability challenge.

### Vision for Sustainable Manufacturing

What does a cleaner, greener manufacturer look like? While the actual articulation of the vision for cleaner, greener manufacturing continues to evolve, its overarching theme remains the same: work with nature, not against it. As a more sustainable business, you can pursue a triple-bottom-line approach, ensuring your strategies incorporate people, the planet and profit. Indeed, this is the heart of the vision for sustainable manufacturing, where both environmental (green) and social (people) sustainability considerations are integrated into every facet of a company with zero environmental impacts.

Many manufacturers have already discovered that improved environmental performance can be a byproduct of their other management efforts, for example, to improve the efficiency of their supply chain or make better products at lower costs of production.

Still it is difficult to disengage from the day-to-day management of your business and make time to also design your future. The challenge of developing a strategic plan is further intensified by the sheer rate of change, seemingly accelerating by the nanosecond. That is why this report was designed for you, the owner/manager of a small- to medium-sized manufacturing firm. It will help you review the key drivers of change, as

well as the topography of green issues that are likely to affect business, so you can proactively plan for success instead of reacting to challenges only as they happen.

More importantly, we hope this management guide will inspire you to face the challenge of environmental sustainability head on. As you will see, there are many compelling examples of other leaders who have already embarked on the same journey; living proof that going green can boost your company's bottom line, increase market opportunity and create competitive advantage. Now is the time to plan to thrive in the fast-emerging greener, cleaner manufacturing sector.

### DSM Engineering Plastics — From biomimicry to biofuel breakthrough

Anticipating greater demand for petroleum-free plastics, DSM Engineering Plastics, a unit of the Netherlands' Royal DSM NV, is creating engineered plastics with polymers derived from natural sources such as the castor oil plant. EcoPaXX™ was one of five DSM Engineering plastics recently awarded the Cradle to Cradle® certification, a high standard for environmental sustainability. These materials are part of DSM's ECO+ portfolio, explains Fredric Petit, sustainability director for DSM Engineering Plastics: "This means they add more value than mainstream products or processes while having a smaller environmental footprint."

The company is inspired by nature and studies nature's designs (biomimicry) to solve human problems in product design. And more, the company's new groundbreaking enzyme and advanced yeast technology will advance the next generation of biofuels — a breakthrough created by studying enzymes in a swiss compost heap and elephant dung. The company then developed an "all you can eat" yeast that improves yield with 100%.

<sup>1</sup> Natural Resources Canada, 2007. *From Impacts to Adaptation: Canada in a Changing Climate*.  
<sup>2</sup> Ibid.

# Drivers of change

**As the environmental sustainability challenge deepens, stakeholders press for cleaner, greener products and services**

There was a time not so long ago when the environmental activist was the lone voice scrutinizing industry's every move — but those days are long gone. Big NGOs like the World Wildlife Fund are now working collaboratively with business leaders such as Procter & Gamble to help them navigate the challenges of going green. Today, the NGOs are also joined by a plethora of stakeholder groups that are interested in your company's track record on environmental sustainability — none more so than your own employees. Experts note “that when employees' values resonate with their company's values, and if they trust that their company genuinely cares about the same things they care about, then they are more energized and productive.”<sup>1</sup> Employees, of course, are also consumers — your customers or your customer's customers — the ultimate critical stakeholder group that should influence your business decisions.

Consumers are increasingly using their wallets to demonstrate their desire to purchase green products from environmentally and socially responsible companies. High on their list of concerns is industry's use of toxics and the potential impacts of this “invisible”<sup>2</sup> form of pollution — not only to the planet, but to the health and well-being of themselves and their families. Governments everywhere are concerned and continue to change the

regulatory landscape. From municipalities to the feds, businesses like yours are being asked to comply with tougher rules and regulations to protect people and the environment. Regulators want to know what materials and substances you are using and how you are disposing of them. The whole process is becoming more transparent as regulators strive to make it easier for the people in your community to access your company's disclosure documents.

**“Essentially, any time you generate pollutants and waste, if you want to look at it from the stance of quality management, those are quality defects. Do you really want to be in the business of making defective products?”**  
— Fred Granek, OCETA

There are also signs regulators have begun to shift the burden of proof of the safety of toxics used in products and processes to producers. For example, the European Union's REACH (Registration, Evaluation, Authorization, and Restriction of Chemical Substances) legislation makes producers — not regulators — responsible for proving the safety of the chemicals they create. REACH further cascades down the supply chain to manufacturers that



<sup>1</sup> Willard, Bob, Oct. 12, 2010. *CSR Efforts Correlate with Employee Engagement*; [www.sustainabilityadvantage.com](http://www.sustainabilityadvantage.com).

<sup>2</sup> Smith, Rick & Bruce Lourie, 2009. *Slow Death by Rubber Duck: How the Toxic Chemistry of Everyday Life Affects Our Health*; Knopf Canada.

are using those materials in their production processes. Several U.S. states are considering REACH-like legislation. Such regulation could already have implications for your business should you plan to export products to regions with similar requirements.

In an effort to better understand how environmental risks and opportunities could impact financial performance, pioneering investors<sup>1</sup> are using their combined investment strength — tens of trillions of dollars — to request disclosure from companies they invest in regarding their GHG emissions and strategies. Emerging areas of research for these investors include companies' use of increasingly scarce natural resources like water and forest products, as well their use and management of unnatural compounds such as chemicals. Investors are also using their power to influence regulators.

Industry standards are also getting greener. From ISO to lean, Canadian manufacturers have long benefited from — and contributed to the development of — standards related to continuous improvement, energy and quality management, and occupational health and safety. Now these standards are being harmonized. Case in point: *ULE 880: Sustainability Standard for Manufacturing Organizations*, an international standard being developed through a partnership between UL Environment, a division of Underwriters Laboratories, and GreenBiz.com.

Customers, regulators, investors and the public at large are all steering manufacturers toward more environmentally sustainable production and business practices. There is no doubt that environmental performance is emerging as a key determinant of Canada's capacity to productively compete on the global stage.

“The ‘green race’ is on, and Canada needs to catch up.” This was the conclusion from David McLaughlin, president and CEO of the Round Table on the Environment and the Economy (NRTEE), an independent organization that advises the federal government, in its October 2010 report on climate prosperity.<sup>2</sup>

The NRTEE's new Low-Carbon Performance Index, based on 15 indicators, provides critical insight into Canada's competitiveness as we progress — ready or not — toward an increasingly carbon-constrained world. According to the index, Canada ranks in sixth place among G8 countries, principally due to our high-carbon energy-emissions-based economy and weak policy (see table below)<sup>3</sup>. Nonetheless, the report notes, with better than average scores on investment and innovation, we are well positioned with a strong foundation on which to build, as evidenced by our economic strength and resilience emerging from the global recession. “The clear reality is this — our competitors are already investing and planning to succeed,” says the NRTEE. “We need to do the same.”<sup>4</sup>

Similar challenges and opportunities can be identified for environmental issues other than climate change. Further pressure to innovate will be driven by competitors; companies that seek to make things faster, better and cheaper than you. You need to concentrate on leveraging environmental challenges to increase your firm's resiliency through increased efficiency, reduced risk and growth via new markets, products, customers and innovation. Maintain a business-as-usual mindset, and you will be left behind as other companies focus on how to profit from the sustainability advantage.

**SOURCE:** *Measuring Up: Benchmarking Canada's Competitiveness in a Low-Carbon World*, available at [www.climateprosperity.ca](http://www.climateprosperity.ca). Reprinted with permission from the National Round Table on the Environment and the Economy.

**HOW CANADA RANKS: BENCHMARKING LOW-CARBON PERFORMANCE OF CANADA & THE G8**

|  | OVERALL | EMISSIONS & ENERGY | INNOVATION | SKILLS | INVESTMENT | POLICY & INSTITUTIONS |
|--|---------|--------------------|------------|--------|------------|-----------------------|
|  France         | 1       | 1                  | 4          | 3      | 1          | 4                     |
|  Germany        | 2       | 5                  | 2          | 2      | 3          | 2                     |
|  United Kingdom | 3       | 4                  | 6          | 5      | 5          | 1                     |
|  Japan          | 4       | 2                  | 1          | 8      | 7          | 5                     |
|  United States  | 5       | 3                  | 5          | 4      | 2          | 7                     |
|  Canada         | 6       | 6                  | 3          | 1      | 4          | 6                     |
|  Italy          | 7       | 7                  | 7          | 6      | 6          | 3                     |
|  Russia         | 8       | 8                  | 8          | 7      | 8          | 8                     |

<sup>1</sup> The Carbon Disclosure Project ([www.cdproject.net](http://www.cdproject.net)) is a pioneer of such programs.

<sup>2</sup> Canada. National Round Table on the Environment and the Economy, 2010. *Measuring Up: Benchmarking Canada's Competitiveness in a Low-Carbon World*. NRTEE.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

# Executive dashboard

## Top environmental sustainability issues for Canadian manufacturers

For many manufacturers, “going green” has been synonymous with “energy efficiency.” However, as seen in the following list, energy is just one of many issues you should monitor and manage. By no means exhaustive, this dashboard of six issues — air emissions, supply chain, solid and liquid wastes, energy, climate change adaptation and water — will provide you with a top-line understanding of how major green issues could impact your manufacturing business.

### 1 Air Emissions — Reducing the risks

In Canada, increasing air pollutants such as GHGs, volatile organic compounds (VOCs), and liquid and solid particulate matter (PM) continue to contribute to poor air quality. This is leading to increased health problems such as asthma, lung cancer, cardiovascular disease — and costs.<sup>1</sup> Biodiversity of plants and animals has also been negatively impacted.

Governments are tightening air quality regulations. Fortunately, they are also helping industry reduce its contributions to poor air quality through a number of economic instruments including green taxes, tax incentives, tradable permits and subsidies.<sup>2</sup> Solutions to reduce pollutants are similar to other toxics-reduction efforts and include material or feedstock substitution, product redesign or reformulation, equipment or process modifications, and spill and leak prevention.<sup>3</sup>

Investments may be required; modifying production processes to reduce PM have already been accomplished by many Canadian manufacturers with reasonable payback.<sup>4</sup> Manufacturers who reduce or eliminate harmful air emissions will benefit from reduced costs, fines and penalties, and improved brand reputation as a cleaner, greener manufacturer. There is also significant market opportunity in the design and manufacturing of new technology and products that mitigate and eliminate air pollutants.

### 2 Supply Chain — Leveraging systems for sustainability

For many manufacturers, the supply chain is viewed more as a necessary component of business, rather than a lever for system-wide transformation — but this is changing. To gain competitive advantage and a better understanding of their true impacts, big retailers (most notably Walmart) have begun to systematically survey thousands of suppliers about their organization’s GHG emissions and other environmentally related issues such as their use of natural resources. In some cases, retailers are also imposing their own standards, as is the case with Whole Foods’ new mandatory packaging guidelines for suppliers of its private-label body care products and supplements in support of the natural retailer’s zero-waste target. Shipping and logistics is an especially robust area of cost savings and sustainable innovation, with everything from route optimization software to the use of low- and zero-emissions sources of transportation.

These examples underscore an important point: supply chains can be a strategic advantage, especially when dealing with issues concerning environmental sustainability. Remember, you create value when you can solve your customer’s problem. You can also collaborate with partners in your supply chain to increase efficiency by reducing and eliminating waste. As companies compete less with other individual companies and more with other networks of suppliers, having a strong, collaborative supply chain will cultivate a distinct advantage for them. Organizations with strong, tensile networks of eco-savvy suppliers are well positioned to win.

<sup>1</sup> Environment Canada, 2010. *Air: Economic Issues*.

<sup>2</sup> Environment Canada, 2010. *Air: Economic Instruments for environmental improvement*.

<sup>3</sup> Canadian Manufacturers & Exporters (CME-MEC), 2010. *CME and OCETA to deliver Cleaner and Greener Manufacturing Program*.

<sup>4</sup> OCETA, June 2010. *Business Value of Toxics Reduction and Pollution Prevention Planning Summary Report from the Toronto Regional Sustainability Program*.



### 3 Solid and Liquid Waste — towards “material parsimony”

Expect waste issues to grow, particularly as municipalities seek ways to divert waste, including hazardous substances, from landfills, which unproductively consume and contaminate valuable land and negatively impact ecosystems. Incineration is one solution, but one that can also contribute to air pollution. Liquid waste poses many problems too, with municipalities continuing to shift the burden — and cost — of disposal to industry. Pollution prevention regulation is also tightening around use and disposal of toxics, behooving industry to prove the safety of their products and increase disclosure.

Similarly, regulators are looking upstream, making manufacturers responsible for the solid waste disposal of the products they make at their end-of-life. “Extended producer responsibility” (or EPR) has roots in Europe and is gaining momentum in North America, particularly in the area of electronic waste (e-waste). As such, think about shifting from a linear “take-make-waste” mindset to a more holistic approach that considers the full lifecycle of your products from design to safe disposal, ideally through recycling and reuse of materials.

In *Earth, Inc.*, professor Gregory Unruh urges manufacturers to follow nature’s rule of “materials parsimony” (or “less is more”) by using fewer materials, and only those that are environmentally and economically recyclable. The benefits of materials parsimony to your business may include reduced supplier and production complexity, reduced toxics risks and compliance costs, volume purchase discounts, improved health and safety, enhanced worker productivity, product attributes and environmental performance.<sup>1</sup>

### 4 Energy — Efficiency and beyond

Expect continued short-term volatility and energy prices to systematically move upwards as reserves of non-renewable resources become more difficult and expensive to access. Potential risks to your business include increased costs of production and competitive disadvantage if your competitors are more energy efficient. Increasing energy efficiency is an obvious first step toward lowering energy costs and yet, a recent CME-Ontario study<sup>2</sup> indicates some manufacturers in Canada are failing to realize the full potential of energy management measures to reduce operating costs, increase margins and reduce GHG and other air contaminant emissions. Of 148 plants surveyed, most had implemented less than 42% of applicable, known technical best practices for energy management, leaving ample room to improve performance and reduce costs.

You can increase your use of energy derived from renewable sources (solar, wind, geothermal, etc.) by purchasing it from a reseller such as Bullfrog Power and/or self-generating the energy onsite. It should be recognized that implementation of such technology will likely require capital, which may be partially offset by some form of government incentive or subsidy (payback on such investments is dependent on many factors including where your business is located). Businesses that generate their own renewable energy may reap many benefits including reduced costs related to energy, compliance and processing; improved environmental performance; and enhanced reputation with customers.<sup>3</sup> If you are not sure where to begin, engage a professional to undertake a comprehensive energy audit to identify target areas (lighting, process energy, etc.) to focus and prioritize your efforts on.

<sup>1</sup> Unruh, Gregory, 2010. *Earth Inc.: Using Nature’s Rules to Build Sustainable Profits*, Harvard Business Press.

<sup>2</sup> CME-Ontario with Stantec Consulting, Marbek and ODYNA, March 17, 2010. *Advancing Opportunities in Energy Management in Ontario Industrial and Manufacturing Sector*. Available at [www.cme-mec.ca](http://www.cme-mec.ca).

<sup>3</sup> Unruh, 2010.

## 5 Climate Change — Planning to adapt and prosper

Like many manufacturers, you may be concerned about what regulators are going to do in terms of restricting industry's GHG emissions, still an area of great uncertainty in Canada and the United States. Without definitive national and federal climate change requirements, a mixture of local policymaking continues to evolve; 20 U.S. states and seven Canadian provinces have either implemented or proposed local strategies, including the development of a regional carbon trading system.<sup>1</sup> Even though it may not be clear what actions governments will actually take, there should be no doubt that they are aiming to reduce GHG emissions to slow climate change. For that reason, it is smart to begin to take steps to identify and reduce your company's GHG emissions.

Canada's manufacturers have already made significant progress in lowering GHG emissions, cutting emissions by close to seven per cent. You should also prepare to adapt to the impact of climate changes — already evident in every region of Canada. More extreme storm events, for instance, could disrupt your supply chain, damage property and make it harder to obtain some raw material inputs such as agricultural or forestry products and water. You need only look at the catastrophic losses faced by the B.C.-based forestry industry due to the Pine Beetle infestation, a result of winters that were too warm to kill off the bugs.

Understand the consequences of rising temperatures for your region as well as those in which your key suppliers operate. By integrating this information into your decision-making, you can more accurately assess how these risks may impact your business and prepare to adapt. On the flipside, explore opportunities to prosper from a hotter, wetter future through, for instance, innovative renewable energy solutions, new uses for Pine Beetle-infested wood and low-carbon products.

In 2007/2008, the global market value of traditional environmental goods and services, renewable energy and emerging low-carbon (a.k.a. "low-emission") activities was estimated at \$7,770 billion and expected to grow 45% by 2015.<sup>2</sup> Another study reported \$1.25 trillion total global private investment in green, including solar, wind, geothermal, ocean/hydro, energy efficiency and agriculture, since 2007.<sup>3</sup>

## 6 Water — Hidden dependencies and opportunities

You may share a common misperception water is a plentiful and secure resource in Canada<sup>4</sup> and that it does not impact your business. While not necessarily a national problem, water scarcity is already a regional concern. Such challenges are expected to intensify as Canada's population rises, the economy grows and climate change advances. Further, water does pose business risks for most Canadian manufacturers.

When water is an essential raw input and/or it powers your production process, the connection is obvious. Less evident, however, is when water dependency is hidden in your supply chain. For example, an electronic goods maker may not appear to be water dependent and yet a major input, the silicon chip, requires vast amounts of clean water to produce. Water dependency can also exist within energy sources. Lack of adequate water supplies can disrupt your production processes and impact time-to-market, leading to financial losses.

There is also regulatory risk as municipalities seek to balance industrial needs for fresh water with community concerns over equitable access to water quality and pollution prevention. A water audit of your business can help you identify dependencies on this finite natural resource, reduce risk and improve environmental performance, not to mention profit margins. In addition, look for opportunities to solve the problem of lack of access to clean water worldwide; the global water industry is already pegged at US\$400 billion and growing.<sup>5</sup>

**“A water audit of your business can help you identify dependencies on this finite natural resource, reduce risk and improve environmental performance, not to mention profit margins.”**

<sup>1</sup> Lanette Wilkinson, March 29, 2010. *Carbon Capture and Storage – Identified Challenges to Implementation*, Stikeman Elliott LLP.

<sup>2</sup> Canada, 2010.

<sup>3</sup> Ethical Markets Media, 2009. *New Global Climate Prosperity Scoreboard Finds Over \$1 Trillion Invested in Green Since 2007*; Media release: Dec. 4, 2009.

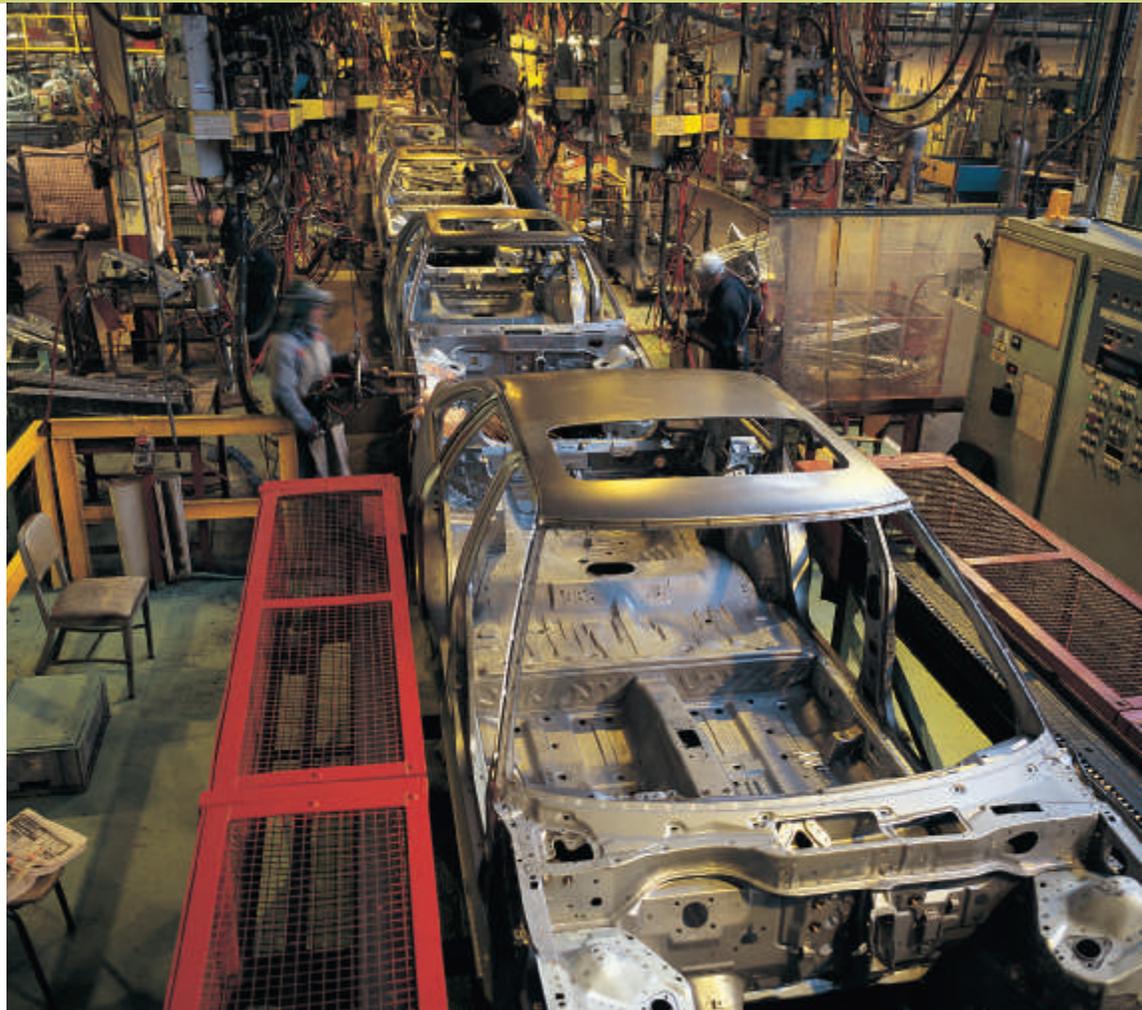
<sup>4</sup> National Roundtable on the Environment and the Economy, June 2010. *Changing Currents: Water Sustainability and the Future of Canada's Natural Resource Sectors*.

<sup>5</sup> OCETA, XPV Capital Corporation, March 2010. *The Water Opportunity in Ontario*.

## The Woodbridge Group – Driving growth with eco-solutions for the auto industry

As passenger vehicles become more luxurious, they are also at risk of becoming heavier – and that makes improving fuel economy that much more challenging for automakers. The Woodbridge Group is driving growth by creating products and technology that help solve customers’ environmental challenges. In fact, the Mississauga, Ontario-based company has indicated its GreenLite™ technology can lighten car seat cushions (by 30%), seat frames (by 35%), and headliners (by up to 40%). Woodbridge’s BioFoam™ products are also replacing chemicals derived from fossils. For these and other efforts to reduce industry toxics use, the company recently earned the *Ontario Green Chemistry and Engineering Award* by the Chemical Institute of Canada and the Ontario Ministry of the Environment.

Sources: [www.woodbridgegroup.com](http://www.woodbridgegroup.com); Ponticel, Patrick, March 2, 2010. “Focused on fuel economy,” *American Engineering Magazine*, 22-24, AEI-Online.org.



# Going for green

**How manufacturers are using the challenge of environmental opportunity to reshape their business models, reduce risk, improve margins, innovate, capture market opportunity and secure competitive advantage**

Identifying the top environmental issues is critical, but so is making an accurate business case for a cleaner, greener manufacturing business, a task that can be challenging. Fred Granek, vice-president, sustainability, Ontario Centre for Environmental Technology Advancement (OCETA) and executive director of the Canadian Centre for Pollution Prevention, says going green is really about process optimization. “Essentially, any time you generate pollutants and waste, if you want to look at it from the stance of quality management, those are quality defects,” he says. “Do you really want to be in the business of making defective products?” Environmental sustainability challenges you to strategically think more about systems than individual problems, he explains.

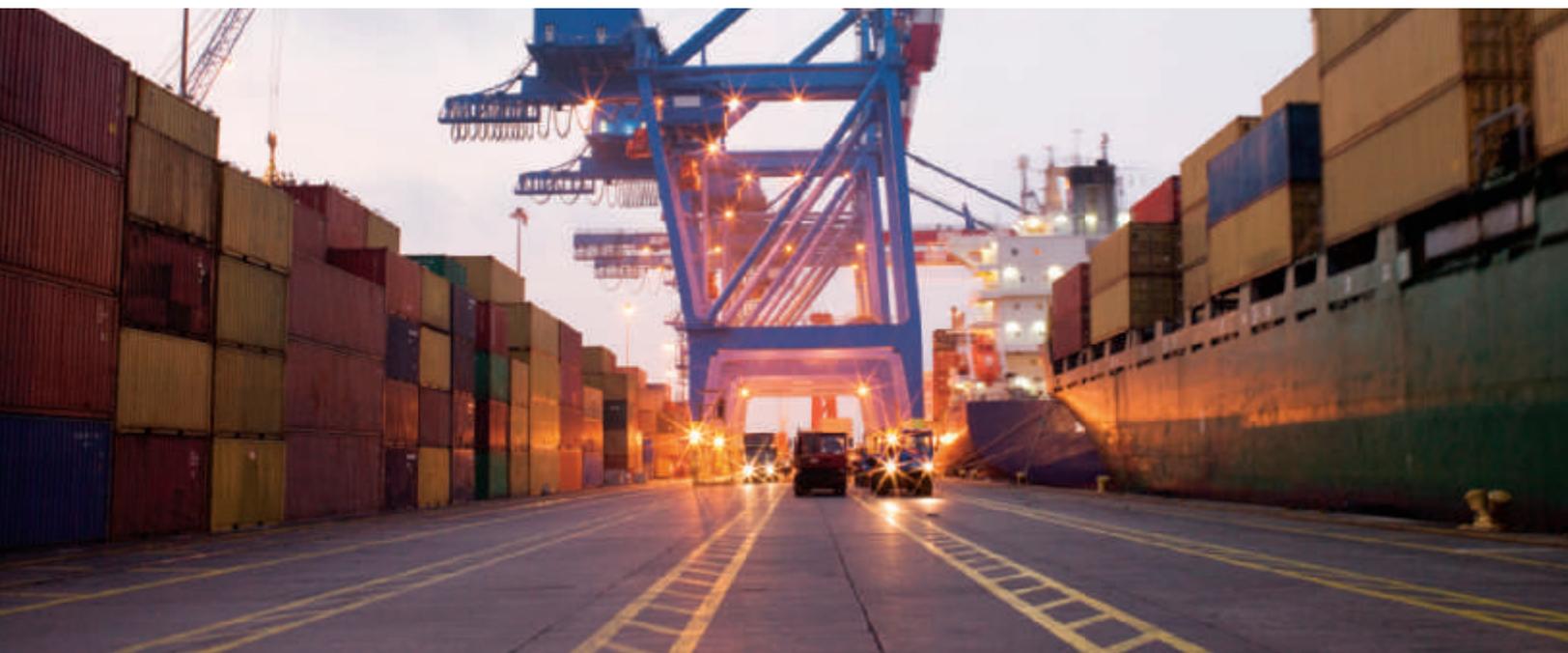
## **Eliminating toxics at Trimac Transportation**

Consider the case of Trimac Transportation, a Canadian company that cleans totes and portable blending tanks of residual paints for the automotive industry.<sup>1</sup> The company’s cleaning process required several solvents, including methylene chloride, listed on Canada’s list of toxics. It also produced wastewater that exceeded the municipality’s new sanitary sewer discharge limits.

A pollution prevention assessment, undertaken through the Toronto Region Sustainability Program by Enviro-Stewards Inc., identified many solutions including changing the cleaning process and eliminating the need for the toxic substance. Instead of solvents, Trimac could use a soluble media blasting process with baking soda, which could be flushed, untreated, into the sewer system.

The business case can be deceiving: if you compare only the cost of baking soda to methylene chloride, you see that the toxic substance is cheaper on a per volume basis; the toxic substance is a more cost-effective choice. However, there are other factors within the system to consider. For example, if Trimac had continued to use the methylene chloride-based process, it would have been required to update its wastewater treatment system to satisfy new municipal bylaws at a cost of \$200,000. By factoring in this information, Trimac realized that switching to the new process — even with the more expensive ingredient (baking soda) — made more sense, with a payback after only three months. The lesson: “You have to cast the net wide enough to capture the costs properly,” says Granek.

<sup>1</sup> The full case study for Trimac Transportation is available at the Toronto Region Sustainability Program’s website at [www.trsp.ca/case\\_studies.htm](http://www.trsp.ca/case_studies.htm)



“Lost value” is another blind spot for executives, says Bruce Taylor, president of Enviro-Stewards, a sustainability consultancy that works with industry across Canada. “Most manufacturers only account for the cost of disposing of material or complying with a regulation, but they also need to take it back to the actual lost production value of the ingredient in the first place,” he explains.

In the food and beverage industry, for example, manufacturers recognize the thousands of dollars worth of surcharges they may have to pay to their local municipality to destroy organics in the sewer treatment system, but routinely ignore the lost production value of that material. “It might cost you a half a cent per kilogram to destroy the material,” he says, “but it costs you a buck or two a kilogram to buy it and then just flush it down the drain.”

As already noted, for many manufacturers, energy efficiency is a logical starting place — but it alone can lead to dramatic shifts in long-term strategic planning, as was the case with Frito Lay Canada.

### **Sustainability Advantage at Frito Lay Canada**

In March 2010, Frito Lay Canada (FLC) began using 100% compostable packaging made from a plant-based polymer for its SunChips® product, a tangible, innovative byproduct of the company’s decade-long strategic journey to go green. Like many manufacturers, FLC took baby steps to green, focusing on compliance, says its sustainability director, Helmi Ansari. In 1999, however, the company took “a very bold step” toward the next phase of conservation by establishing baselines for its energy consumption metrics (natural gas, electricity, heat and water) in manufacturing and adopted very aggressive double-digit targets — “big hairy audacious goals” (BHAGs) such as cutting electricity use by 25% and water by 50% for every bag of chips made.

At that time, FLC was already one of the most energy efficient manufacturers in its field, so these targets were seemingly impossible and yet, within a few years many goals were achieved. Furthermore, the process of achieving those BHAGs had created an unexpected byproduct — the sowing of a culture of conservation that would soon spread throughout the organization. From there, they started thinking about what the next big breakthrough from a manufacturing perspective would be and, today, have set a long-term goal to achieve “net zero” environmental impact for its operations. This is embodied by their guiding statement of “leave no trace,”

### **Best practices in energy efficiency – Frito Lay’s heat recovery systems**

Heat recovery is an energy-efficient approach especially well-suited to Canada’s northern climate. “The more demand you have for heating, the more heat recovery technology can be financially beneficial,” says Helmi Ansari, sustainability director, Frito Lay Canada. The snack foods producer has reduced the manufacturing fuel consumption at all five of its Canadian manufacturing plants by 20% since 1999 using some form of heat recovery system. These actions have enabled the company to significantly reduce costs due to reduced natural gas consumption and also shrink GHG emissions.

says Ansari. An example of that would be achieving zero landfill (ZLF) status, which is defined as sending less than one percent of manufacturing waste to landfills.

Sounds far reaching, but Frito Lay is already one step closer with its new “near net-zero” facility in the southwestern United States. The plant, which produces more than 100 million pounds of Frito Lay chips every year, is being retrofitted. When fully online in 2011, the Casa Grande, Arizona-based facility will be a model of environmental sustainability, a plant that will generate two-thirds of its energy needs through renewable sources and recycling 80% of its wastewater onsite. A European-style “district energy system” running on renewable wood and agriculture waste will produce 100% of the steam needed to power multiple thermal energy processes at the facility. A photovoltaic solar array will produce 50% of the plant’s required electricity. Process water will be recycled through a membrane bioreactor (MBR) process water filtration plant. Combined, all of this technology will enable the company to cut GHG emissions by 50%. The company says the cost of the retrofit is not much more than the cost of operating the plant as usual over the next 25 years. By generating most of its power onsite, the company has insulated itself against future energy price shocks and other energy crises such as brownouts and blackouts.

In Canada, Frito Lay is also getting closer to its “net-zero” vision with many strategic actions, including the recent launch of its zero-emission electric delivery vehicles and an innovative zero-landfill program that already sees 95% of its manufacturing waste diverted from landfills (one plant has attained 99%). Every decision at the company is aligned with its four “planks” of people, products, partners and planet — and this strategic planning is paying off with a stronger bottom line.

“When you look at all the issues that make up the field of sustainability and the goals we’ve set for ourselves of achieving net zero, it *is* daunting,” admits Ansari. “We just hope that by doing these things, we’re able to show other manufacturers that these strategies and actions can be both good for the planet and for business.”

### Sustainable Innovation at Procter & Gamble

At Procter & Gamble, lifecycle analysis is helping grow market share and solve environmental challenges through development of what it calls “sustainable innovation products” such as its Pampers disposable diapers.

“Studies show that most of the environmental impact of disposable diapers comes from their raw material production,” explains Tim Penner, P&G Canada’s CEO.

“Over the past 20 years, we’ve decreased our average product weight by one-third and packaging weight by two-thirds. In 2010, with the introduction of Pampers Cruisers Dry Max®, we now have a diaper that is 20% thinner, which means less resources are used in their production and fewer trucks are used for shipping.”

It is bottom-line benefits such as these that are giving way to big strategic shifts in planning at the world’s largest packaged goods company. In its biggest commitment yet, P&G recently declared a new long-term environmental sustainability vision, part of a larger “purpose-inspired growth strategy” that aims to “improve the lives of more consumers, in more parts of the world, more completely.”<sup>1</sup> The vision comprises end-point “stretch goals” that have no defined time limits:

- Products — use 100% renewable or recycled materials for all products and packaging; having zero consumer waste to go to landfills and designing products that “delight consumers while maximizing the conservation of resources.”<sup>2</sup>
- Operations — power all of its plants with 100% renewable energy, emit no fossil-based CO<sub>2</sub> or toxic emissions, deliver effluent water that is as good as or better than influent water quality, with no contribution to water scarcity, and have zero manufacturing waste go to landfills.

In addition to these long-term goals, P&G has established defined short-term targets including replacing 25% of its petroleum-based materials with sustainably sourced renewable materials by 2020. “I firmly believe that all issues related to sustainability will be solved by innovation,” said Bob McDonald, P&G’s global CEO, adding that they see tremendous market opportunity in doing so.<sup>3</sup>

### Ecovative Design LLC – Satisfying demand with bio-packaging

Ecovative Design LLC in Green Island, New York, is going green by literally growing its EcoCradle™ packaging into whatever shape is required, meeting market demand for petroleum-free, eco-friendly packaging options. Using their MycoBond technology, moulds are filled with a mixture of agricultural waste and mycelia. The mushroom roots (mycelia) eat the waste and grow. It takes one week for the fungus to fill out the moulds, at which time heat is applied to halt growth. Further processing innovations show the fungi-packaging can be made with 98% less energy than Styrofoam, yet it meets all of the same, sought-after packaging qualities.

Sources: [www.ecovativedesign.com](http://www.ecovativedesign.com), <http://dwell.materialconnexion.com>



<sup>1</sup> Procter & Gamble, 2010. *Environmental Sustainability: New Long Term Vision*, [www.pg.com/sustainability](http://www.pg.com/sustainability)

<sup>2</sup> Ibid

<sup>3</sup> Hosted by [www.greenbiz.com](http://www.greenbiz.com) on Sept. 27, 2010.

# Leadership matters

By now, we hope you realize that you do not have to be the head of a global business to garner the benefits of going green. Environmental sustainability is scalable; companies of all shapes and sizes can work to reduce their environmental footprint and make money in the process. You do need to be aware, however, of the management implications of embedding green strategies into all facets of your business. For instance, consider how increased focus on environmental sustainability could alter the way you attract and retain employees, including decisions about training and development programs. Engagement of your key internal stakeholders in the journey is critical to strategic success.

As a manufacturer, you are also very well positioned to capitalize on green due to your existing competencies with respect to efficiency, innovation, technology, engineering and systems. Fortunately, there are also many manufacturing best-practices you can build upon. For example, improvements in the stewardship of natural resources as well as in lean inventory and supply chain practices can help ensure more reliable and cost-competitive access to energy and raw materials. The reduction and recycling of waste and manufacturing byproducts can also help you reduce

costs and improve productivity. Lifecycle product management is a guarantee of quality as well as a critical customer service that can differentiate you from your competitors.

Above all, remember that you are in the business of providing solutions for customers. Your business opportunities are bound to expand enormously if you can become part of your customers' success in environmental sustainability.

Your bench strengths combined with a new strategic assessment of the risks and opportunities that lie ahead for your company, your commitment and a determination to succeed will help you lead the way toward achieving a cleaner, greener and more competitive vision for your business.

There should be no question about it: making money and enhancing environmental performance go hand-in-hand. Figuring out how to minimize the risks and maximize the opportunities of environmental sustainability is critical for your business success, as well as the future of our economy, our communities and our planet.

## For more information and advice on greening your business:

- Contact an RBC Royal Bank® account manager at 1-800 ROYAL® 2-0
- Visit us online at [rbc.com/business-advice](http://rbc.com/business-advice)
- To learn more about RBC and the environment, please visit [www.rbc.com/environment](http://www.rbc.com/environment).

# Resources

There are many sources of expertise to help you green your business. Here are just a few to get you started:

**Canadian Manufacturers & Exporters/Manufacturiers et exportateurs du Canada** provides many resources to help members, including conferences and workshops on topics ranging from toxics reduction to energy efficiency and other areas, to help you stay competitive. Visit [www.cme-mec.ca](http://www.cme-mec.ca).

The “**Greening Your Business**” section in the **RBC Commercial Advice Center** features a variety of multi-media resources to help business leaders, including a comprehensive, 50-page guidebook called *Greening Your Business: A Guide to Getting Started*, free for download in French and English. Other topics include buying a brownfield, adapting to climate change, water, carbon, increasing energy efficiency, green building, and greening your supply chain. Visit [www.rbc.com/business-advice](http://www.rbc.com/business-advice).

To learn more about climate risks for your business, visit **Natural Resources Canada’s** Climate Change and Impacts and Adaptation Division website at <http://adaptation.nrcan.gc.ca>.

The **National Round Table on the Environment and the Economy** (NRTEE) website has many valuable resources. Degrees of Change, a poster, summarizes 60 specific effects of climate change across Canada at increasing levels of global warming, available at [www.climateprosperity.ca](http://www.climateprosperity.ca).

**RBC Capital Markets** can help you learn more about carbon emissions trading, including daily news and access to carbon trading experts: [www.rbccm.com/carbontrading/](http://www.rbccm.com/carbontrading/).

**Natural Resources Canada’s Office of Energy Efficiency** (OEE) provides many resources for industry through its Canadian Industry Program for Energy Conservation (CIPEC), including energy management workshops, toolkits, grants and incentives, technical information, and calculators: <http://oee.nrcan.gc.ca/industrial/cipec.cfm>.

While focused on Ontario, **Toronto Regional Sustainability Program**, run by **OCETA**, features real-life case studies from a variety of industry sectors to help you understand how others are succeeding at becoming more environmentally sustainable. Find it at [www.trsp.ca](http://www.trsp.ca). On a national level, visit OCETA’s **Canadian Centre for Pollution Prevention** website at [www.c2p2online.com](http://www.c2p2online.com) for upcoming events in your region and other resources.

**Environment Canada’s** website at [www.ec.gc.ca](http://www.ec.gc.ca) has many useful tools filtered by environmental topic (pollution and waste, climate change, air, etc.) as well as information on government regulations and funding opportunities.

The federal government’s **Chemical Substances** website, [www.chemicalsubstanceschimiques.gc.ca](http://www.chemicalsubstanceschimiques.gc.ca), includes fact sheets, FAQs, risk management information, and guidance documents.

The **Canadian Brownfields Network** (CBN) is a national organization providing research and other information related to brownfields: [www.canadianbrownfieldsnetwork.ca](http://www.canadianbrownfieldsnetwork.ca).





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