

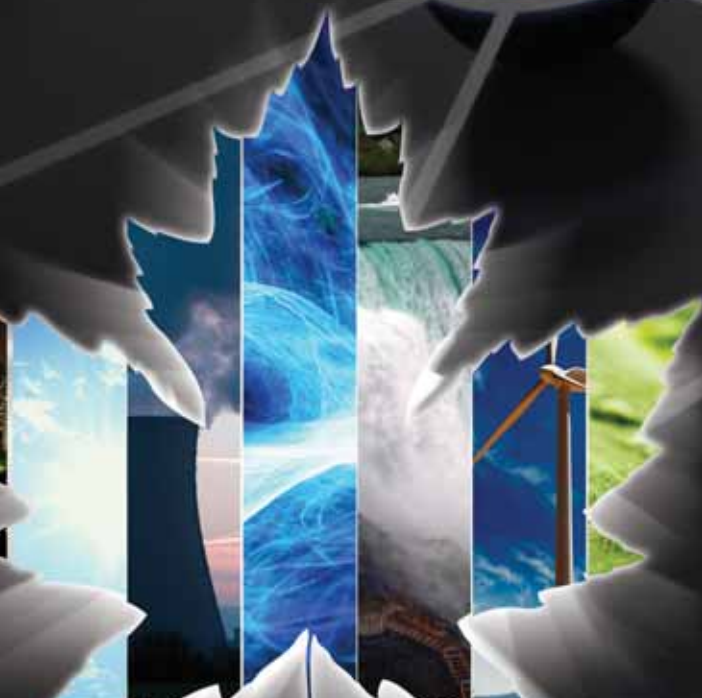
THE CANADIAN CHAMBER OF COMMERCE

LA CHAMBRE DE COMMERCE DU CANADA



Powering up Canadian prosperity:
Growing the energy-sector value chain

July 2010



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“Canada is blessed with an abundance of energy resources. Enough to satisfy our own needs, enough to make it available for others. For many decades, that’s exactly what we have done—and we’ve done it well. We’ve built an enviable standard of living for more than 32 million people. The energy sector has been a major contributor, mostly as a result of developing oil, natural gas and hydroelectric energy sources, and selling off what we don’t use.”

From *Powering up Canadian Prosperity: Realizing the energy sector’s potential and ensuring continued access to a stable, secure, clean and flexible supply of affordable energy*,¹ a report by the Canadian Chamber of Commerce.

As Canadians, we are truly fortunate to live in an area of the world rich in energy resources. The ability to develop these resources for our own use and sell off the rest has produced extraordinary benefits.

But could we be doing more than simply ensuring our own comfort and selling the excess? Absolutely.

In the paper quoted above, released during the 2009 Canadian Chamber of Commerce Annual General Meeting, the Canadian Chamber of Commerce issued an urgent call to action, imploring all levels of government to come together with stakeholders to develop a Canadian Sustainable Energy Strategy. The strategy would ensure:

- our energy industry flourishes with strong competition among energy sources that drive innovation and consumer choice;
- Canadian businesses are competitive in global markets;
- we are able to leverage our energy abundance into sustainable, value-added industries;

- Canadians continue to have access to reliable and cost-effective energy;
- we can satisfy our energy requirements while protecting the environment;
- the stage is set for job creation in the energy sector and related industries;
- the diversity and magnitude of Canada’s energy resource base is recognized; and
- the development of new technologies can be used to increase the Canadian standard of living.

The Canadian Chamber of Commerce believes that a long-range, inclusive Canadian Sustainable Energy Strategy would allow the energy sector to develop sustainable industries—including chemical manufacturing, carbon capture and storage, resource upgrading, advanced nuclear manufacturing and the manufacturing of energy production parts and equipment—farther up the value chain.

This report offers recommendations on how this can be done for the benefit of all Canadians.

¹ The Canadian Chamber of Commerce, October 2009, www.chamber.ca/index.php/en/policy-and-advocacy/C214/

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INTRODUCTION

From the extraction of oil, gas and coal to the production of electricity from other sources such as wind, water and the atom, energy is one of Canada's greatest resources—and it is vital to the economy in every part of the country. In 2008, the energy sector employed 360,000 people—fully two per cent of Canada's workforce—and accounted for 6.8 per cent of Canada's GDP.²

Real opportunities remain to create even more value for Canada than it already gets from the energy sector—more jobs, more investment and more tax revenues—that can be used to pay for Canadian social programs and other government priorities.

The extraction and the production of energy could be the basis for an entire value chain of products and services. Here are just a few examples:

- Processing companies can make additional technological advancements with oil sands bitumen, upgrading it into more advanced products, including synthetic crude oil and refinery products.
- Chemical manufacturers can use the byproducts from oil and gas production and upgrading to make chemicals and plastics.
- The expertise required to build and maintain nuclear power plants can be clustered and leveraged into research and advanced manufacturing.
- Equipment manufacturers can make the wind turbines and solar panels that are needed by energy companies to produce renewable power.
- Companies can use waste heat from their operations to generate electricity.

Growing our energy value chain will continue to be one of Canada's best opportunities for a competitive advantage in the global economy. The oil sands provide a textbook case on how adding value to raw material has provided many thousands of jobs—and added royalties and tax revenues—for the benefit of all Canadians.

This country has long supported the idea of value-added manufacturing, of making products from our natural resources in addition to exporting those resources to other countries for processing. At all stages of the value chain—research, development, processing, manufacturing and distribution—jobs are created, local firms gain new business and communities increase their tax base.

Energy is our competitive advantage—and Canadians know it

During the recent financial crisis, countries around the world invested billions of dollars of government money to stimulate their economies. In September 2009, the British Broadcasting Corporation polled 22,000 people worldwide asking them where they thought the stimulus money should be spent. An overwhelming majority of Canadians (85 per cent) favoured increased government spending on renewable energy and clean technology to stimulate the economy, compared with only 67 per cent in the United States, 76 per cent in the United Kingdom and 72 per cent worldwide.³

While increasing the production and use of clean and renewable energy provides direct environmental benefits through lower emissions, the economic benefits extend up and down the entire value chain. From the manufacturers and suppliers of renewable-energy-generation machinery such as solar panels or windmills, to the engineers and technicians that service nuclear power plants, everyone benefits.

As the Canadian Chamber stated in its *Powering Up* energy framework report, Canada needs a sustainable energy strategy. To fully maximize the value of our energy resources, this strategy must look beyond energy production to include the entire energy value chain.

² *Canadian Energy Overview 2008—An Energy Market Assessment*, May 2009, National Energy Board, www.neb-one.gc.ca/clf-nsi/rnrgynfmitn/nrgyrprt/nrgyvrvw/cndnrgyvrvw2008/cndnrgyvrvw2008-eng.html#s1

³ BBC World Service Poll, September 13, 2009, Program on International Policy Attitudes (PIPA), Globescan and the BBC, www.globescan.com/news_archives/bbc2009_globalPoll-04/

THE ENERGY VALUE CHAIN

The context

On the world stage, Canada is already seen as an energy powerhouse but it now has the potential to be so much more. Our energy resource base is both large and diverse—it is the envy of the world.

Whether it is oil, natural gas, hydro, wind, nuclear, coal, waste conversion or even tidal power, every province and territory produces energy in some form. While Canadians consume much of this energy ourselves—almost 200 gigajoules (GJ) per capita⁴—we also export a significant amount, much to the benefit of our international trade balance. With the high price of oil in 2008, Canada's net revenues from energy exports reached \$73 billion.⁵ Also in 2008, we exported 57.7 terawatt-hours of electricity and became a net exporter of coal.⁶ These exports provide benefits to Canadians in every part of the country.

According to the International Energy Agency, Canada is the world's fifth-largest producer of energy. Even more importantly, we are a rapidly *growing* source of energy in many forms. Only China, the United States, Russia and Saudi Arabia produce more energy than Canada. Further, Canada is the world's largest producer of uranium fuel for nuclear-power generation, the second-largest producer of hydroelectricity, the third-largest producer of natural gas (and growing through the development of shale gas), the seventh-largest producer of oil and the seventh-largest producer of electricity. Increasing oil sands production is expected to make Canada the world's fourth-largest crude oil producer within 10 years.

The impact on our economy is significant. The Canadian Energy Research Institute has estimated that the oil sands industry alone will increase Canada's gross domestic product—the total market value of all final goods and services produced in a country in a given year—by three per cent by 2020 and will create, in the years leading up to 2020, 5.4 million person-years of employment. Forty-four per cent of those jobs will be outside of Alberta, the province often associated with energy production.



⁴ International Energy Agency, *Worldwide Trends in Energy Use and Efficiency*, 2008, www.iea.org/papers/2008/Indicators_2008.pdf

⁵ *Canadian Energy Overview 2008*, National Energy Board

⁶ *Canada 2009 Overview*, International Energy Agency, 2010

Time to come together

The energy value chain extends throughout the country and affects many Canadians. From the manufacturing of bolts for the generators at oil-production sites, to advanced manufacturing that supports and maintains nuclear power plants, these industries can form the basis for industrial clusters. These clusters can feed on their entrepreneurial synergies to create more companies and jobs. The right competitive climate for energy-related advanced manufacturing and servicing industries will increase Canada's competitive advantage.

Clustering is already happening. Today, there are centres of advanced secondary manufacturing, albeit on a smaller scale, that illustrate the potential:

- In Central Alberta, chemicals are created from the byproducts of oil and gas processing in the area around Edmonton known as the Industrial Heartland. Currently, the area contributes approximately \$10 billion annually to the Canada's gross domestic product. Through upgrading and further chemical processing, this could increase to \$25 billion by 2020.
- In the Durham Region of Ontario, there is a large nuclear-based advanced manufacturing industry. It comprises world leaders in the nuclear sector.
- The Ontario chemical sector represents 35 per cent of Canadian chemical manufacturing, most of it centred in Sarnia.

Clustering improves productivity, environmental performance and innovation. The best minds are attracted to the energy value chain where new technologies can be developed, implemented and used to foster leadership in further energy technology development.

The value chain builds upon our energy resources

An important part of the energy value chain is the chemical manufacturing industry, specifically, the petrochemical sector. Chemical companies rely on energy production to provide both fuel and feedstock for their processes. Chemical manufacturers in Canada shipped \$49.8 billion worth of product in 2008 and employed 79,063 people. The difference in the value between the raw materials

and the final product (the value added by the chemical manufacturing process) was \$15.6 billion. While the largest investments are in Ontario, Alberta and Quebec, you can find chemical manufacturing in every province. Almost half of these products are exported—the United States being, by far, our largest trading partner, with \$24.4 billion in exports going to that country. More than a third of chemical manufacturing workers have university degrees, second only to the Information Technology sector in Canada.

The petrochemical sector in Alberta is growing in importance and is a significant part of the economy, worth \$13.3 billion per year. According to the Energy Resources Conservation Board, bitumen production in the oil sands will grow from 1.3 million barrels per day in 2008 to 3 million by 2018.⁷ With the right investment framework, this could increase the opportunities significantly for chemical companies who look to the upgrading of bitumen as one avenue for the supplying of valuable feedstock for existing chemical facilities as well as potential new investments.

Bitumen upgrading

The process that changes bitumen into synthetic crude oil is known as upgrading; products are created by separating and converting the various components of the bitumen. This can be done at the plant site or the bitumen can be diluted and transported to an upgrader through a pipeline. Chemical companies can use the byproducts of upgrading such as off-gases as feedstock for their value-added manufacturing processes.

Upgrading can take place through one of two processes: delayed coking or hydrocracking. In the coking process, carbon is removed from the long-chain molecules, resulting in the production of petroleum coke, a potential feedstock for the petrochemical industry. In the hydrocracking process, hydrogen is added to the mix to create short-chain molecules that can be used as a feedstock at nearly any refinery in the world.

⁷ Energy Resources Conservation Board, *Alberta's Reserves 2008 and Supply/Demand Outlook 2009–2018*, June 10, 2009

Chemical manufacturers are only part of the energy value chain. As energy cannot be produced without parts and equipment, the value-added electrical equipment manufacturing sector is another vital part of the energy value chain, shipping \$3.8 billion worth of product in 2007 with a value-added component \$1.7 billion.⁸

Manufacturing in the energy industry includes the design and production of components for energy production, equipment and infrastructure for oil and gas, and renewable energy machinery such as windmills or solar panels. Growing the energy industry helps to grow these industries as well.

The potential for growth is huge. Efforts to promote the use of clean and renewable energy are an important part of Canada's strategy to reduce its overall emission of greenhouse gases. This will lead to many new jobs in the renewable-power-production sector.

Canada has committed to a goal where 90 per cent of its electricity production will be non-emitting by 2020. At present, 73 per cent of Canada's electricity comes from clean, non-emitting energy,⁹ with hydroelectricity and nuclear power providing the majority of this. To achieve our target, there will need to be an increased use of wind, solar, biothermal and all other types of renewable energies and increased use of natural gas as their primary backup. Once again, we can leverage our resources (sun, wind, water, geothermal, tides and others) up the value chain.

WHAT NEEDS TO BE DONE?

The Canadian business environment contains some, but not all, of the key pillars needed for the energy value chain to grow and succeed. Our corporate tax environment is competitive and our universities are top-notch. But the advanced processing and manufacturing industries cannot flourish on a house that is missing pieces of its foundation.

A Canadian energy strategy must look towards growth and prosperity throughout the energy value chain. By looking at the value chain as a whole and at the specific actions that can be taken to help it succeed and grow, the Canadian Chamber of Commerce sees a number of areas for improvement.

⁸ Strategis, www.strategis.ic.gc.ca/cis-sic/cis-sic.nsf/IDE/cis-sic3353defe.html

⁹ Environment Canada, *Canada's Action on Climate Change Fact Sheet*, www.climatechange.gc.ca/default.asp?lang=En&n=D43918F1-1

Market-based competitiveness

When looking at how to best encourage the growth of the energy sector's value chain, it is important to understand that the role of the government is to ensure an attractive business and investment climate. Using that climate to find opportunities is the role of a market-driven private sector.

Energy markets must be open and transparent. While it is important to encourage the growth of both the energy industry and the entire energy value chain, all government actions that affect the energy sector should respect a market-based approach that treats all players equally.

For example, there are some concerns that when large projects are government-financed, there is a real danger of market manipulation with the government being both the financier and the regulator. It is important that when governments set the rules, those governments ensure a level playing field with all players—including themselves.

There are actions that governments can take within a market system, the best being those that consider the value chain as a whole. Policy levers applied within a market-based system can encourage movement along the value chain. For example, actions focused on reducing the higher costs for upgrading within Canada (infrastructure, human resources, etc) would encourage more Canadian resource upgrading and value-added manufacturing without hampering our ability to continue to meet all of our energy export commitments.

One effective market-based approach is giving firms access to an Accelerated Capital Cost Allowance (ACCA). A few years ago, a 100 per cent allowance was provided for oil sands development. This resulted in a large increase in economic activities. Similarly, Budget 2010 offered a 50 per cent per year (declining balance basis) allowance for clean-energy generation projects.

The ACCA for major energy-related investments is an excellent tool for encouraging investments and the development and commercialization of new technologies. It can be a critical tipping factor when companies are making investment decisions and comparing Canada

with other jurisdictions. We can build upon this by specifically expanding the ACCA to include industrial activities that add further value to our energy resources such as energy-related advanced manufacturing, carbon capture and storage and resource upgrading and refining.

Concerns will be raised regarding governments' lost revenue through this action. In fact, the investments that this will encourage will generate economic activity that will, in turn, bring new taxation revenue—revenue that will never materialize if the investment is not made. The concern that the ACCA is seen as a break for big business must be addressed by both the government and the recipient. Clear messaging about the return on investment and the tremendous trickle-down effect throughout the economy that shows how the thoughtful use of ACCA can be a significant job creator is needed. The ACCA only delays when taxes are collected—the same taxes are still collected. But in the meantime, the early cash flow incents new investments and revenue sources. Foregoing early revenues may well lead to significantly increased revenues at a later date, while moving investments further along the energy value chain.

Because the goal is to foster major investments, an ACCA should be in place for at least five years to give companies time to revise their business plans and make the investments to take advantage of it. It is important to note that, when limited to a short term, an ACCA is not as useful as it will do little to encourage investments that have long-term time horizons or complex environmental approvals processes.

RECOMMENDATION:

Expand access to the Accelerated Capital Cost Allowance to include major projects that add further value to our energy resources such as energy-related advanced manufacturing, carbon capture and storage and resource upgrading and refining and extend it for a minimum of five years.

Regulatory competitiveness

Regulatory uncertainty creates investment uncertainty. Businesses look to the regulatory framework to provide a rational system of assessment for energy choices to determine the environmental effects of energy production due to greenhouse gases, as well as mercury contamination and other air, water and soil pollution. Companies are delaying large investments in Canada because of the lack of clarity on the future policy framework for emissions of greenhouse gases and air contaminants.

Regulatory certainty is needed to encourage energy companies to invest in Canada, which will, in turn, allow for investments to be made in related value-added industries. They too must have regulatory certainty. The

regulatory framework must be based on firm scientific principles and its economic and environmental impacts must be understood.

Well-meaning regulations on end-use products and waste disposal can have a ripple effect through the manufacturing chain. For example, if a local government bans or taxes plastic bags, this will have an impact on the bag manufacturers, who will in turn reduce their orders from plastic film converters. The film converter firms will order fewer supplies and, perhaps, take longer to upgrade their machinery, thus reducing the number of orders going to the die manufacturers and plastic-resin manufacturers. Less work for the resin manufacturers also means less work for the chemical companies. As you can see, small and targeted regulatory change can have a huge impact on the entire value chain.

Energy from waste

Governments in Canada are just now starting to recognize that energy-from-waste processes are an important part of the answer to both waste-disposal and power-generation concerns. Many jurisdictions around the world have chosen to use both energy-from-waste processes and recycling to divert more waste from landfills. However, in Ontario, materials sent to energy-from-waste sites are not included in waste-diversion targets and are not counted as diverted waste. To meet the targets, materials that could be converted into energy may instead be sent to recycling for regulatory reasons, not economic ones.

In areas of shared jurisdiction, such as the environment, it is very important for governments to work together to harmonize regulations and reporting requirements so companies do not have to meet multiple (and sometimes conflicting) requirements. Governments can get in the way of the development of major investments that can create needed, Canadian industrial critical mass by making it too difficult to comply with regulations or to meet reporting requirements.

The federal government and all provinces and territories must work together to ensure their regulatory systems meet the needs of Canadians, while being compatible

and in sync with each other through single-window reporting and consistent measurements systems. The goal should be “one project, one assessment.” In particular, misalignment among federal, provincial and territorial requirements for environmental assessments continues to discourage business development in many areas of Canada. The current process has cost the Canadian economy many tens of millions of dollars in lost productivity and investments. A truly unified process would reduce duplication, reduce costs and reduce the period of uncertainty associated with decisions that are pending.

As a broad principle, harmonization or mutual recognition of similar regulatory requirements across multiple jurisdictions is needed. It is imperative that regulations be based on fact and scientific principles rather than political goals.

RECOMMENDATION:

Achieve harmonization or mutual recognition of regulations and assessments among governments in Canada and, in the long term, among governments in North America, so that investments in the energy sector are not hampered by excessive red tape. The goal must be “one project, one assessment.”

Technology and innovation

Technology development will be key to the success of the energy sector in the years to come. This includes improvements to existing systems as well as the development, commercialization and implementation of new ones. Canada could significantly benefit from new innovations but it is losing ground to other countries in the commercialization of new technologies. Our energy sector value chain can build upon our research and development expertise to provide opportunities for the commercialization and manufacturing of innovative products in Canada.

As noted earlier, major energy value chain clustering offers a great opportunity for technology synergies. Integrated sites can eliminate waste as it becomes the raw material for other value chain partners within the complex. In turn, our brightest and best innovators will be attracted to these integrated opportunities which are rich proving grounds for newer, better and cleaner technologies.

The development of new technologies can be tremendously expensive and is often financed by one company alone. Decisions on technology deployment are usually made within a long-term context. The reality of capital stock

turnover means that bringing new technologies and innovations to market and achieving full adoption could take decades to complete.

However, new technologies may have benefits far beyond the company that develops and implements them. For example, new methods are emerging to upgrade bitumen with reduced carbon-dioxide emissions that could help to support increased production from the oil sands. While this would directly benefit oil sands operators and add value to their work, increased upgrading activity could provide feedstock materials to Alberta’s chemical producers, resulting in even more investments and more jobs. Another example is the need to develop and implement a proof of concept for small-scale nuclear facilities for the provision of steam, hydrogen and electricity in-situ oil sands extraction.

Similarly, there are new technologies being developed to harness the power of the wind and to generate power from tides. We have leading examples where these technologies are built in prototype form in Canada (such as the tidal power project in Annapolis Royal, Nova Scotia, launched in 1984). What can be done by governments to encourage the Canadian commercialization of these prototype technologies and encourage the actual production of this machinery in Canada?

It is a three-step process:

1. Support innovations.
2. Encourage Canadian commercialization.
3. Support the implementation of these innovations.

It is only when the second and third steps have taken place that maximum value is created. All steps are vital.

Governments have a role in investing in the development of new technologies that have yet to prove themselves as viable commercial products to encourage their development in Canada. For example, both the federal and Alberta governments have invested in the Alberta Carbon Trunk Line (ACTL) that will take carbon dioxide captured from industrial processes and ship it to be used for enhanced oil recovery. While using carbon dioxide from industrial processes for enhanced oil recovery is

not a new technology (the chemical industry has been doing this for 20 years), the ACTL could be a major enabler for transferring carbon dioxide from smaller plants without them having to develop expensive and dedicated infrastructure themselves.

Governments can also enhance research and development through the ongoing support for partnerships between universities and industry. Existing facilitators such as the Natural Sciences and Engineering Research Council of Canada (NSERC) industry partnership programs need to be encouraged.

RECOMMENDATION:

Continue to provide financing and incentives for the research, development and commercialization of new energy technologies.

Infrastructure and access to resources

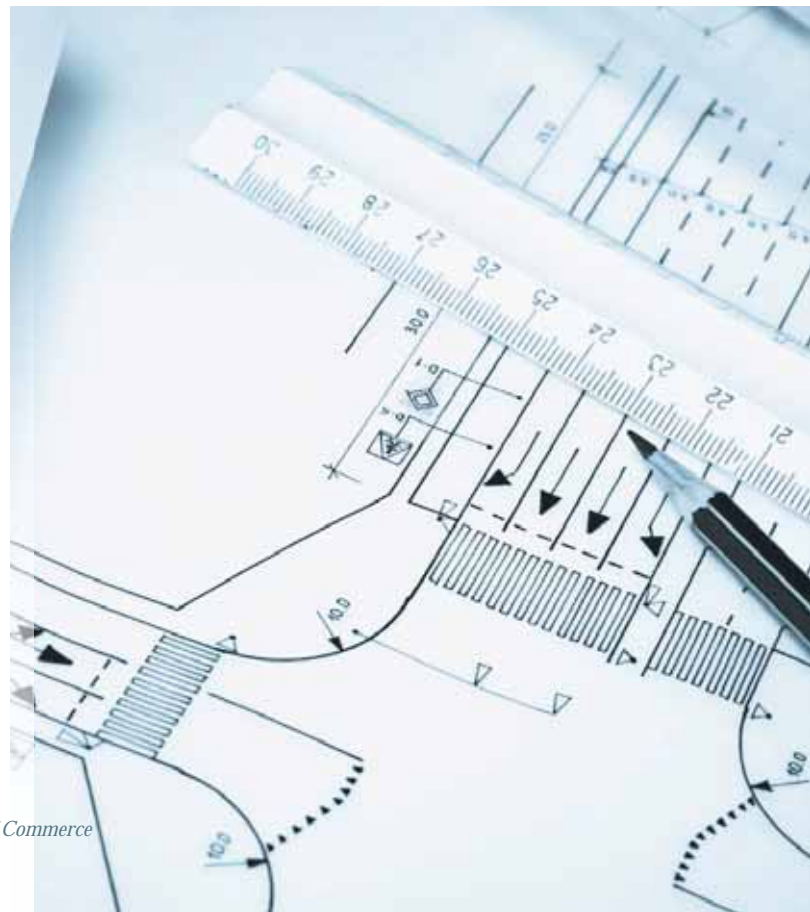
All manufacturers require infrastructure—from stable, secure and affordable sources of energy and feedstock to more general public infrastructure such as roads, schools and hospitals for their workers. Infrastructure can also be important for those finding innovative ways to dispose of waste and those who want to implement innovative processes using waste and byproducts from other companies. The Alberta Carbon Trunk Line mentioned earlier is a good example of this.

Much of the energy industry has developed in areas of the country that had not previously been well-populated. As a result, in many cases the current infrastructure is either not sufficient to support the development and growth of value-added industries or is not there at all. Pipeline capacity for refined petroleum products is a particular problem.

Make Canada a good place to do business

Currently 60 per cent of the bitumen extracted from the oil sands is upgraded into synthetic crude oil within Canada, while 40 per cent is exported as raw bitumen to the United States. With oil sands production expected to more than double over the next 10 years, much of the incremental production is expected to be sent to the United States for upgrading. However, if a greater percentage of the future oil sands bitumen were to be upgraded in Canada rather than sent south in raw form, chemical manufacturers could use the byproducts from that process as feedstock.

Canadian energy companies are going to upgrade and refine their raw materials in whatever way is most profitable for them. The key will be to ensure that Canada is the most profitable place to do that upgrading. Additional support in the form of infrastructure developments would also help level this playing field and bring investment to Canada.



Chemical companies want to produce more advanced products in Canada. But a pipeline infrastructure is not currently in place to support exporting those advanced products in place of the raw materials. While there are pipelines to move raw bitumen to the United States, the main pipelines for more advanced oil products run east–west in the United States and not south from Canada. The only north–south product pipelines are along the East Coast and those that flow north from the Gulf of Mexico. This greatly limits the potential markets for Canadian chemical producers. Similarly, new pipelines to the Canadian west coast could help increase access to Asia–Pacific and other offshore markets for producers at all levels of the energy value chain.

The problem is not just in Alberta and Western Canada. While access to off-gases from the oil sands can provide feedstock for Western Canada’s chemical industry, 35 per cent of Canada’s chemical manufacturing is located in Ontario. Eastern Canada’s refineries are being closed and Ontario chemical manufacturers are in urgent need of adequate and new sources of supply for their raw materials.

Fortunately, there are a few bright spots. Shale gas is revitalizing areas where resources had previously been thought depleted or close to it. Gas from Marcellus shale, located beneath upstate New York and Pennsylvania for example, have the potential to provide vast new sources of supply to refiners and chemical manufacturers in Ontario. Until recently, there was thought to be only limited gas supplies in this region. The Horn River will be able to provide new sources of feedstock to firms in Alberta and the rest of Western Canada as well as to provide for new export opportunities. Access to these new sources of feedstock supply will be vital to growing the chemical industry, in particular. They are “game changing” resource opportunities that will help us to meet North America’s dual challenges of energy security and climate change.

Another infrastructure issue for manufacturers in many parts of Canada, particularly in Ontario, is the increasing cost of electricity, much of which is due to government policy. Governments must understand the impact on the manufacturing sector of choosing a policy that will result in higher electricity costs. For example, the high feed-in tariffs for wind and solar-power generation in Ontario will drive up the price of energy for all users.

Choosing how electricity is generated for political reasons has real, and often negative, consequences on all types of manufacturing. While the Canadian Chamber of Commerce is on record as supporting a price on carbon dioxide emissions—which will almost certainly raise the price of energy—that price should be applied in a non-discriminatory fashion to all forms of energy. Governments should avoid excessive subsidies to politically preferred forms of energy that hide the true cost of producing that energy.

There is a great deal of opportunity for the development of renewable energy in many parts of Canada, but along with the implementation of a regional energy approach, there is also a need to invest in a cross-Canada electricity transmission infrastructure to ensure that green power can be delivered to market. This requires smart infrastructure that addresses the intermittent nature of renewable energy sources. Developing critical power infrastructure will contribute to meeting renewable energy generation goals and reducing greenhouse gas emissions.

RECOMMENDATION:

Invest in smart electricity infrastructure and improve the east–west linkages across Canada.

Need for skilled labour

The energy sector requires a labour force with a broad range of specialized skills. It is important Canada be able to attract the best and the brightest with competitive labour rates. Rapid growth, especially in the oil sands, and the aging Canadian workforce, has created a highly competitive labour market that has resulted in shortages of good people. During the boom in Alberta, it was clear that the lack of human resources drove up the cost of labour to unsustainable levels and scared off investors. As other advanced-processing industries grow out of the energy sector, the need for skilled labour will increase even more.

Governments, especially provincial, territorial and regional governments, can assist in increasing the base of skilled workers by encouraging related companies to come together in a cluster to provide a premium work destination for workers from around the world. (An example of this is the nuclear engineering cluster east of Toronto.)

Labour is also becoming more mobile, and people will travel to places with the most opportunities and the highest quality of life. We must remember Canada is not the only place in the world that is experiencing a skilled-labour shortage. We need to ensure that Canada is a preferred destination for workers.

In many cases, very specialized skills are needed. For example, nuclearreactor design and construction provides jobs for nuclear engineers. Encouraging clusters of related expertise will help keep skilled workers and researchers in Canada instead of leaving to work in other more supportive jurisdictions.

To ensure the mobility of labour, we need a cross-Canada agreement to recognize credentials. The Trade, Investment and Labour Mobility Agreement between Alberta and British Columbia that came into effect in 2009 is a good start and we would encourage all provinces and territories to work toward a nationwide agreement that includes all Canadians.

RECOMMENDATION:

Encourage the development of energy-sector clusters and ensure that cluster areas have adequate community infrastructure (schools, roads, and soon) to support their growth.

RECOMMENDATION:

Develop a cross-Canada agreement to recognize credentials for skilled workers.

Incentives and the investment climate

When companies consider where they will invest, Canada competes with a number of countries around the world and, for North American investments, almost always with the United States. All of the issues raised by this report are considered by investors when they compare potential plant sites for new projects.

Most of our energy trade is with the United States. Diversification of our export markets, especially for oil and gas, can help ensure diverse long-term access to markets for Canadian products. For example, while continuing to build our position in the North American market, there are opportunities in the Asia-Pacific region that could increase our customer base and help to insulate ourselves from sharp drops in demand in the United States. Similarly, by diversifying the available Canadian product lines beyond primary resources into more advanced chemical products, we will be creating opportunities to move into new markets. Our approach to markets for the energy industry and its entire value chain should be unfettered and global.

Governments must commit to develop policies that encourage the growth of the primary production of energy in Canada and that add further value through resource upgrading and chemical manufacturing. Integrating the entire value chain into a strategy for sustainable growth will lead to broader economic diversification.

There are similar manufacturing opportunities in other parts of the energy sector. Utilities will need to build new nuclear reactors. Renewable energy producers will need new machinery. Unfortunately, the manufacturing sector struggles with both high energy costs—particularly electricity—and competition from emerging countries.

The investment climate depends on all of the issues discussed above. Government decisions around regulations, incentives, skilled labour, infrastructure and market predictability are all elements that companies consider when they are investigating where to invest. It is equally important to recognize that there are many investments underway and that governments must ensure that efforts to attract new investments do not have a negative impact on the existing players.

Governments can make a difference by supporting business collaboration on energy and energy-related projects. The magnitude of investment required to start a new project is much more than many companies, even the largest, are capable of providing. This is especially true for small- and medium-sized businesses (SMEs). Governments can provide assistance in bringing companies together to jointly create new industries and projects.

Governments play a key role in providing an attractive business climate. It is then up to the market-driven private sector to find the opportunities.

RECOMMENDATION:

Provide advice and assistance to potential investors in the energy sector—particularly SMEs—to help them collaborate on large projects.

CONCLUSION

Energy is Canada's strategic advantage and encouraging the development of the energy sector and its entire value chain will leverage its vast resource base, providing even greater benefits for all Canadians. While much of the work will need to be done by the private sector, there is a role for governments across the country to play. The Canadian Chamber of Commerce recommends they pursue this role vigorously.

RECOMMENDATION:

The entire energy-sector value chain must be considered when developing policies, including the development of an overall national strategy.



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