› Chemistry Industry Association of Canada's Submission

CLIMATE CHANGE MITIGATION OPPORTUNITIES, CLEAN TECHNOLOGY, INNOVATION AND JOBS

Responsible Care®
Our commitment to sustainability.

CHEMISTRY INDUSTRY
ASSOCIATION OF CANADA

The Canadian Chemistry Sector – An overview

Canada's chemistry industry uses raw materials such as natural gas liquids, oil, electricity, minerals and biomass to manufacture the building blocks for more than 70,000 value-added products, many of which are critical to the country's economy.

Worldwide, the chemical and petrochemical industries are by far the largest industrial energy users, accounting for 30 percent of energy demand. Globally, chemical manufacturing contributes 7 per cent of total greenhouse gas (GHG) emissions. In Canada, the sector accounts for less than 2 percent of the national GHG inventory.

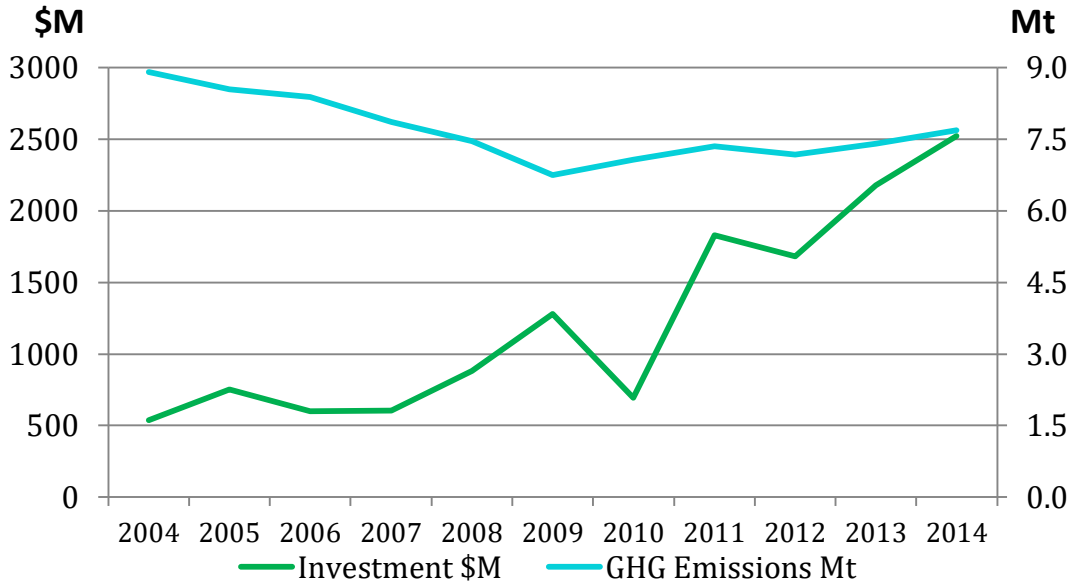
For more than 30 years, Canada's chemistry sector has been at the forefront of the journey towards responsible and sustainable chemical manufacturing. Founded in Canada in 1985, ***Responsible Care®***, the Chemical Industry Association of Canada's U.N. recognized sustainability initiative, is now practiced in 62 countries. Through Responsible Care, CIAC member-companies have committed to continuously improving their products and processes, and their efforts have been paying off.

> **To date, ahead of national GHG regulations and policies, CIAC members-companies have reduced their absolute GHG emissions by 69 per cent from 1992 levels.**[1]

Canada's chemistry industry is already a world leader in low-intensity carbon chemical production due to: the abundance of low-carbon feedstock; relatively new plants and upgraded equipment; process and product re-engineering; access to, on average, one of the lowest GHG-intensive national electricity grids; and energy conservation measures. These reductions are the result of significant new investments, including more than $12 billion in the last decade alone. In fact, the link between capital investments and emissions reductions is very evident in the chemistry sector because the industry has always had energy efficiency as a core element of its business practices.

[1] These reductions are in addition to those associated with the use, by other industries, of chemically-derived products and technologies which have been shown to deliver emission savings of more than 2 units for each unit of direct and indirect emissions coming from the chemistry sector.

Figure 1: CIAC Member-Companies: Investment vs. GHG Emissions



Today, chemical manufacturing is the fastest growing manufacturing sector in North America. Investments approaching $US 200 billion, or more than 260 projects, are at various stages of development. Unfortunately, Canada, even under limited carbon cost pressures, has been unable to capture its traditional share of these new investment dollars and projects. Based upon historical investment levels, the Canadian chemistry sector should have seen about $16 billion of the projected investment activity, while it is currently tracking at about one third of that.

A vibrant and sustainable chemistry sector can provide Canada, through its products and technological innovations, with a sustainable competitive advantage. The chemistry industry understands that it is hard to reconcile the growing demand for its products alongside a scientific imperative and government objectives calling for reduced GHG emissions from industrial sources. There is no question that the imposition of unilateral carbon price signals on domestic chemical manufacturers, at a time when our main trading partners are not doing so, will make the business case for investment in Canada that much more challenging. Investors look for long-term certainty, and they are not currently finding it here.

It would be counterproductive to implement carbon policies and rules that will serve to discourage development and investment in the chemistry sector in Canada at a time when the country resolutely seeks to transition to a more sustainable economy. Canada's industry, and Canadians overall lose rather than win when domestic production and associated emissions are

simply moved offshore to other jurisdictions. This is especially true given that the early efforts in our country made Canada's chemical manufacturing operations among the lowest emitting plants worldwide. Reducing production in Canada and dispatching it to other jurisdictions will quite simply make the global climate problem worse, not better.

> ***Recommendation 1:*** *Canada should support a carbon policy that will encourge investments into the Canadian chemistry sector.*

The Chemistry Sector – A solutions provider

Very few people appreciate the fact that more than 95 per cent of all manufactured products rely on chemistry. Nor do they understand that addressing the challenges of clean energy, clean air, clean water and of a sufficient supply of safe and nutritious food on a global scale is entirely dependent on chemistry-based solutions. From improved building insulation and lighter plastics for automobiles, to the production of solar and wind energy equipment, these, and other innovative chemistry products and processes are essential in helping society meet its needs while reducing its carbon emissions.

> ***Recommendation 2:*** *To meet the global climate challenge, Canada must fully develop the potential of the chemistry industry so that it can deliver innovations and solutions that effectively reduce emissions both within the industry and throughout the Canadian economy.*

Today, research shows that for every unit of GHG emitted as part of chemical manufacturing, the industry's products and technologies result in a net reduction of 2.6 units of emissions during a product's lifecycle - from extraction of feedstock and fuel, through production, ultimate use and end of life disposal. Using emerging technologies, this ratio increases to more than 4:1.

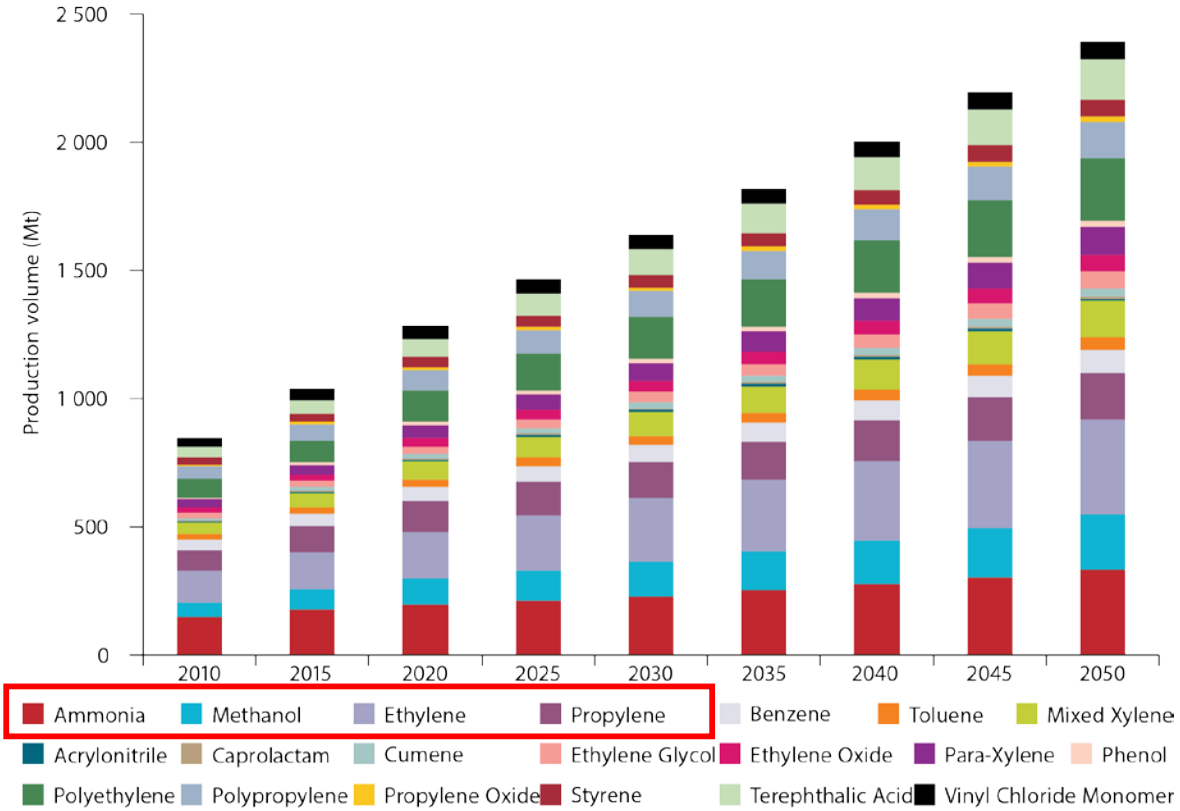
> **Compared to total global emissions of 46 Gt in 2005, there would have been 5.2 Gt, or 11 percent, more emissions in a world without the chemical industry.[2]**

[2] ICCA (International Council of Chemical Associations), (2009), *Innovations for Greenhouse Gas Reductions - A life cycle quantification of carbon abatement solutions enabled by the chemical industry*, ICCA, Belgium.

CLIMATE CHANGE MITIGATION

Chemistry is such an integral part of the solution to address the global challenges of the future that it will likely require a tripling of chemical production volumes by 2050. More specifically, it is estimated that by 2050, production volumes of the four principal and most energy and GHG intensive platform chemicals - ammonia, ethylene, methanol and propylene - will exceed the total present day production of all chemicals.

Figure 2: Forecast of Chemical Production Volumes Between 2010 and 2050



Source: IEA (International Energy Agency), (2013), *Technology Roadmap Energy and GHG Reductions in the Chemical Industry via Catalytic Processes,* IEA, France.

The industry is resolute in its efforts to work with governments to develop effective long-term regulatory policies that successfully minimize the impacts of climate change without impeding necessary innovation, investments and growth.

> ***Recommendation 3:*** *Rather than viewing the chemistry sector as a key source of the climate change problem, policy makers need to recognize that the sector represents the single most important solutions provider.*

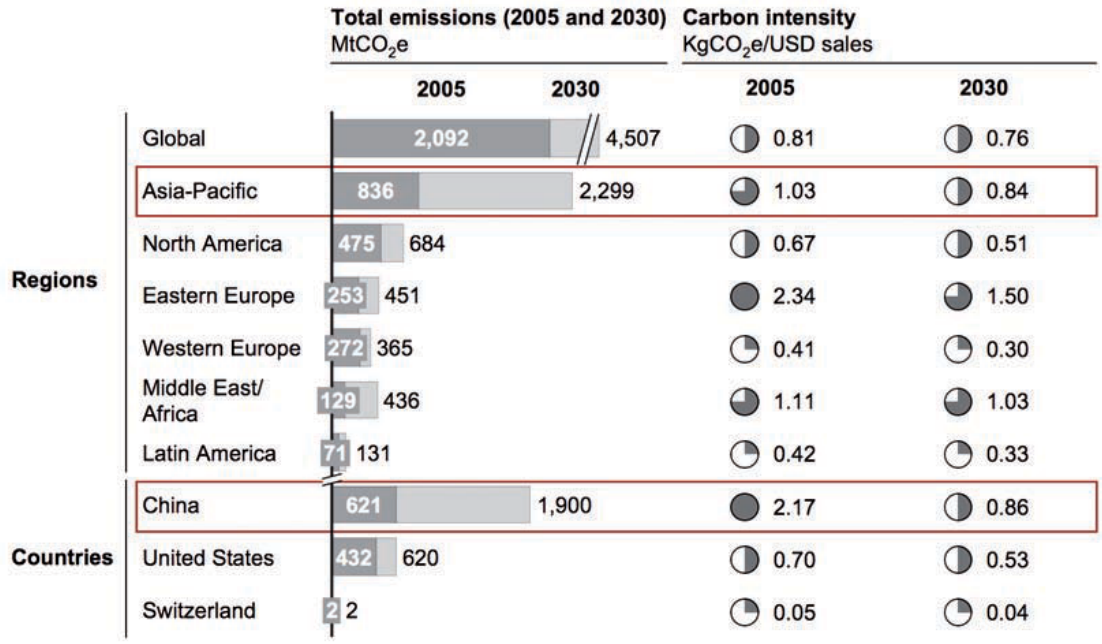
In the next section we highlight a sample of chemistry solutions provided by CIAC's member-companies that are key cost-effective emissions reduction opportunities.

Chemistry Solutions – ideas, technology, and innovation

1. Chemical Production – Emission Abatement Technologies

It is important to take a look at potential reduction technologies that can be implemented in the manufacturing of chemicals, recognizing that overall the Canadian chemistry industry has already achieved world-class energy efficiency and carbon emission intensity, as shown below.

Figure 2: Regional comparison of chemical industry CO_{2e} intensity



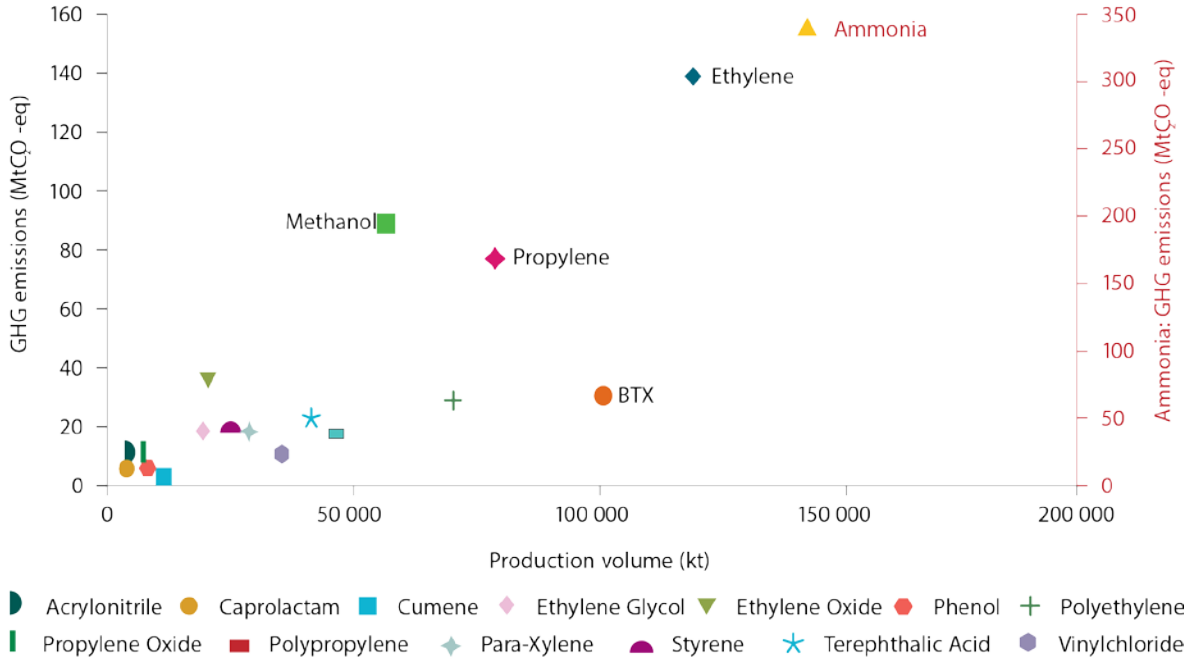
Note: Looking at the ICCA benchmarking data above, it is possible to calculate that the carbon intensity in Canada (using data from North America and the US) would be around 0.36 kgCO2/USD, world-class by any measure.

Source: ICCA (International Council of Chemical Associations), (2009), *Innovations for Greenhouse Gas Reductions - A life cycle quantification of carbon abatement solutions enabled by the chemical industry*, ICCA, Belgium.

Nearly two thirds of GHG emissions from chemical manufacturing are associated with energy used to transform feedstock materials into final products and with process emissions. The remaining emissions, approximately 27 per cent, are associated with the end-users of those chemical products and the disposal phase. Only a small fraction is associated with feedstock extraction.

The manufacture of 18 products, out of thousands, from the chemistry industry accounts for 80 per cent of energy demand and 70 per cent of GHG emissions.3 These products include the highest volume organic chemicals: Olefins (Ethylene, Propylene), Ammonia, BTX aromatics and Methanol. As described earlier, overall global demand for these products is expected to nearly triple by 2050.

Figure 3: Global GHG emissions versus production volumes of top 18 large-volume chemicals, 2010

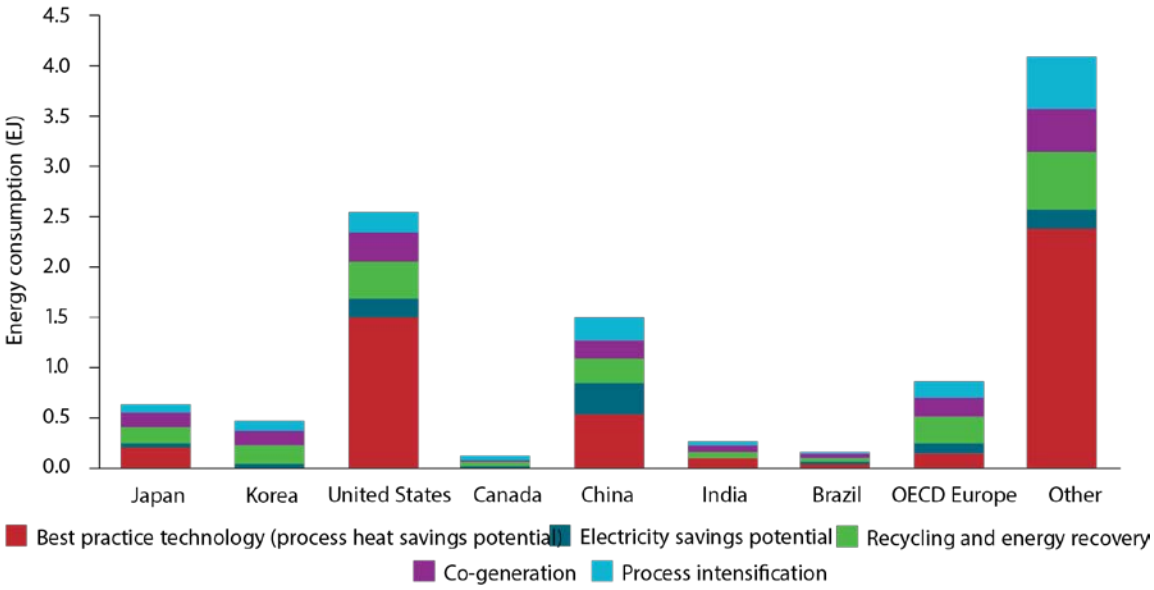


Source: IEA, (2013), *Technology Roadmap Energy and GHG Reductions in the Chemical Industry via Catalytic Processes,* IEA, France.

[3] In 2013, the International Energy Agency (IEA) along with DECHEMA (Society for Chemical Engineering and Biotechnology) led a review of energy and GHG reductions opportunities in the chemical industry. This section identifies the main finding of that review.

Looking at current IEA's worldwide energy and GHG emission intensity benchmarking data, chemical producers in Canada clearly stand with the leaders. As can be seen in Figure 4, Canada has an intensity less than one third that of Asian producers, which represent nearly 50 per cent of worldwide production, and on par with the best producers in Europe. Since Canada is already using leading edge technologies (natural gas/ethylene cracking co-generation and catalysts), there is little room for improvement. Moreover, it is important to recognize that energy improvements do not correlate directly with GHG emissions reductions since irreducible process emissions (emissions related to the chemical reaction itself) represent a significant portion of total emissions.

Figure 4: Current energy saving potential based on 2010 production levels for chemicals and Petrochemicals based on best practice technology deployment



Source: IEA, (2013), *Technology Roadmap Energy and GHG Reductions in the Chemical Industry via Catalytic Processes,* IEA, France.

While decades of innovation, energy integration and rising energy costs have captured most of the easily achieved energy intensity improvements, deployment of best practice technologies in the next 10 years has the potential of providing energy savings in the range of 0.2 per cent to 1 per cent per year over a business as usual scenario. For example, there are more than 130 different processes that can be used to manufacture the top 18 large-volume chemical products, promoting the use of the most energy efficient processes

could lead to those savings. The most cost-effective way to implement best technology practices is associated with the building of new plants.

> ***Recommendation 4:*** *Recognize that technological innovation and step-change emissions reductions are completely dependent on new capital investment. Carbon policies must be designed in a manner that encourages rather than discourages future investment and economic growth through new builds – even if this means short-term emissions growth.*

National Silicates
an affiliate of PQ Corporation

Catalysts

Catalysts are key components in a number of industries that rely on robust chemical processes. By using a catalyst, the activation energy of the chemical reaction can be reduced, which translates into more cost-efficient processes thanks to lower energy consumption. Silica catalysts, for example, represents one of the most promising technologies to improve the carbon footprint of the plastics and polymer manufacturing process.

A step change in energy consumption will require the development of game changing technologies, possibly around the use of biomass feedstocks and hydrogen from renewable sources, both of which have not reached commercial maturity. One such game changing technology is the use of natural gas crackers in replacement of oil or coal feedstock. Taking advantage of the growing availability of shale-gas in North America, this transformative technology is already being deployed. Producing olefins in Canada versus naphta or coal based processes in Asia today results in an 8 to 10-fold energy-savings and proportional GHG emissions reductions. The major barrier to investment in these solutions is the unpredictability of future energy and compliance costs.

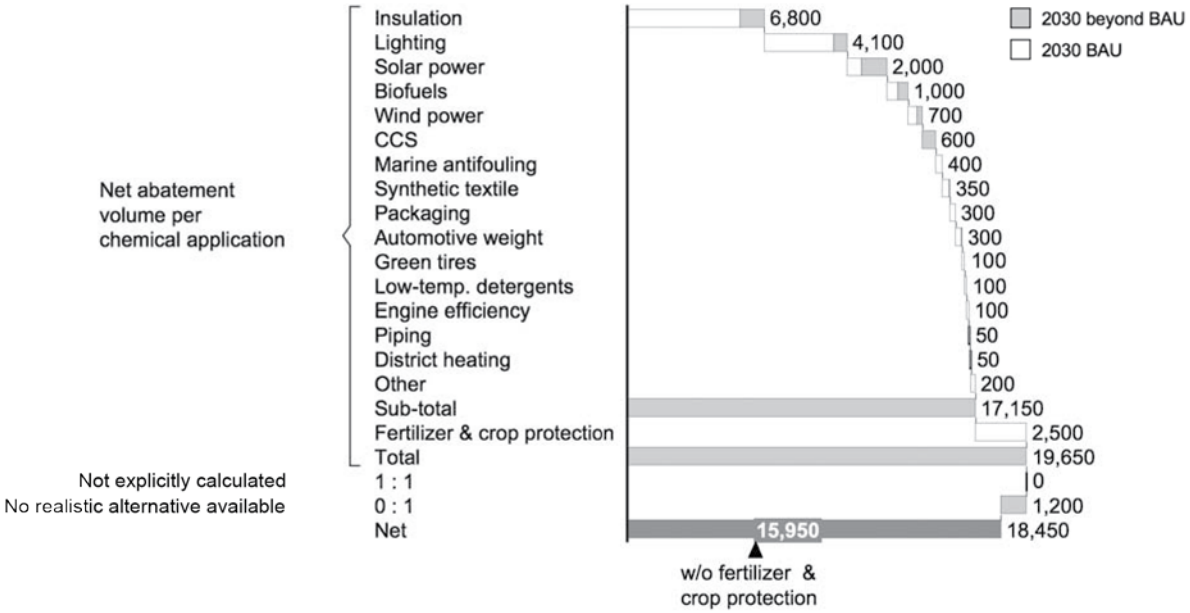
> ***Recommendation 5:*** *Support the development of the lowest carbon-intensive feedstocks and energy sources, such as shale-gas, and allow for their safe and secure transport to chemical facilities.*

> ***Recommendation 6:*** *Focus on the largest, most effective and lowest cost mitigation measures first (e.g. energy efficiency) to optimize the impact of abatement technologies.*

2. Avoided Emissions, the lowest hanging fruit

While chemical manufacturing is a carbon-intensive industry, the sector is unique in its ability to enable other industries and society to save energy and reduce emissions. By far, avoided emissions, in the use phase of chemistry-derived products, represents the greatest contribution that the sector continues to make in reducing GHG emissions and energy demand economy-wide.

Figure 5: Additional 4.7 GT abatement potential beyond business-as-usual (BUA) in MtCO2e



Note: These represent the most important GHG emissions reduction opportunities enabled by chemistry applications.

Source: ICCA (International Council of Chemical Associations), (2009), *Innovations for Greenhouse Gas Reductions - A life cycle quantification of carbon abatement solutions enabled by the chemical industry*, ICCA, Belgium.

Recommendation 7: *Recognize the long-term impact from avoided emissions over the lifecycle of innovative new products and technologies.*

Over 100 studies were reviewed to identify the most effective emission abatement opportunities enabled by chemistry. The most important ones are described below with examples coming from CIAC member-companies. The list is meant to be illustrative but not necessarily comprehensive. A great number of applications listed below are produced by several CIAC members, not only the ones highlighted in the following examples.

1. Building Sector

Of all the energy consumed around the world, one third is used for heating and cooling buildings. In Canada, emissions from the building sector have risen unabated by 16 per cent since 2005.

The International Energy Agency estimates that with moderate improvements to energy efficiency standards in new buildings and a moderate increase in renovation of existing buildings, global GHG emissions from buildings could decrease by 12 per cent by 2050. More aggressive energy efficiency standards for new builds and more ambitious renovation rates could see as much as a 25 per cent reduction.

In both cases these are reductions attributable only to the building envelope (the parts of the building that form the primary thermal barrier between the exterior and the interior) itself and only with technologies and products currently available. Applied chemistry will provide solutions for even better results.

Insulation

Insulation is one of the biggest opportunities for emission reductions as it greatly reduces heat loss and cooling demand. For example, three key foam insulation materials - expanded polystyrene, extruded polystyrene and polyurethane - have been shown to result in 233 to 1 emission reductions over the life of buildings, even excluding savings associated with cooling losses.

Additionally, the manufacturing of an insulation material typically used in a house results in an estimated 700 kg of emissions. Over its lifetime use, however, the insulation prevents more than 150,000 kg of emissions (avoided energy losses). In other words, the emissions avoided though use of this innovative product exceeds that of the emissions associated with its production - more than 200 times over.

Foam insulation

Multiple benefits in one application: high insulation value, near-zero air permeability, increased building strength, weather resistance, improved comfort, improved air quality and reduced operating costs and emissions.

Recommendation 8: *Introduce minimum energy performance standards in building codes and provide incentives for owners to increase insulation values for new and existing buildings.*

Advanced Lighting Solutions

Compact fluorescent bulbs (CFB), over their lifetime, have been shown to result in an average saving of 256 kg of CO_2 over incandescent bulbs. Modern light-emitting diode (LED) bulbs are resulting in much greater savings.

Some of the advantages of LED bulbs over CFL are: nearly 40 per cent greater efficacy (lumens per watt); four times greater life expectancy; no mercury, and less fragile. On average, the CO_2 emissions associated with the use of one bulb, two hours every day, is 4.4 kg/yr for LED versus 7.3 kg/yr for CFL. This is why they are already recognized by various governments as a significant emissions reduction lever.

Organometallics for LED lighting

Chemtura

Organometallics are key materials in the manufacture of high brightness LED chips which are essential to energy efficient LED lighting applications.

Construction Materials

Plastic piping has been steadily replacing iron, copper, stoneware and concrete piping. Today, more than 70 per cent of water pipes are made of plastic. Plastic piping results, on average, in CO_2 emissions savings of 56 per cent compared to traditional cast iron, stoneware or concrete piping. This is mostly due to their lower material use, and emissions associated with production and disposal.

Green sense concrete technology

BASF We create chemistry

Enables formulation of concrete mixture that contains a greater proportion of recycled materials, this greatly decreases the carbon footprint and environmental impact of construction. On average each ton of waste material used in replacement for clinker in cement brings reductions of more than 650 kg per ton.

Reflective roofing

ARKEMA

Kynar latex-based coatings enable buildings to reflect the sun's energy from the roof surface. It allows buildings to retain cool air reducing the demand for air conditioning. It also reduces the impact of urban heat islands.

2. Agriculture and Food

Fertilizers and Crop Protection (agrochemicals)

These represent the second largest opportunity for GHG emission's reductions brought by the chemistry sector. The use of chemical-derived fertilizers and crop

protection products has increased yield by 30 to 85 per cent, depending on the crop type, and have reduced the demand for land-use changes.

Nitrogen stabilizer

Instinct Nitrogen Stabilizer works more effectively for farmers (increased yield) and the environment (reduced leaching losses) resulting in a reduction of 664,000 tons of CO_2 equivalent in 2014 alone.

Recommendation 9: *Consider land-use impacts in evaluating the use of fertilizers and crop protection.*

Consumer Food Products

Packaging is one of the most important uses of plastics. Due to its lighter weight, plastic packaging is bringing major emissions reductions versus traditional packaging materials such as glass, paper, steel and aluminum. While the production of plastics results in higher levels of CO_2 per ton of material, the GHG emission reductions during usage are often 2 to 8 times lower depending upon the product. In addition, plastics reduce food wastage and improve food safety.

Polyethylene barrier film

High-performance polyethylene resins reduce food wastes by extending food freshness, reducing packaging weight, enhancing barrier properties and providing product protection. Because of reduced weight and size, packaging increases the capacity of every container resulting in less trucks on the road and reduced fuel emissions.

Food preservation

Lactic, gluconic and citric acids act as safe food preservatives and have been shown to be effective against salmonella, E. coli. They are used in antibacterial wash systems ensuring safety of fresh meats. The company's ingredients are biodegradable and of natural origin.

Low Global Warming Potential (GWP) refrigerants

Opteon GWP refrigerants are at work cooling the warehouses and transportation systems that preserve food from farm to fork. At every step of the cold chain, Opteon ensures optimal temperature to preserve the flavor, colour, and nutrients of food.

Bio-based food seasoning

Disodium succinate, is an important ingredient of complex seasoning agents used for flavor enhancement. BioAmber uses sugars (from corn, cane, beets, and other biomass) as feedstock to produce the same building blocks as petrochemicals. The process results in a 100 per cent reduction in GHGs and 60 per cent reduction in energy consumption.

3. Transport

Transportation is another sector that requires a careful look. Since 1992, GHG emissions from Canada's transportation sector have increased by 33 per cent. Manufacturing lighter vehicles, developing alternative fuels, and moving to electric private and public transportation vehicles will depend upon advances in materials, fuel, and energy storage alternatives developed trough chemistry solutions.

Combustion Engine Efficiency

By using fuel additives and synthetic lubricants, the efficiency of both gasoline and diesel engines can be improved by 2 per cent and 5 per cent respectively.

Lube and fuel additives

A broad portfolio of fluids enables product formulators to improve vehicle performance and significantly reduce fuel consumption.

Biodegradable hydraulic oils

A broad portfolio of fluids enables product formulators to improve vehicle performance and significantly reduce fuel consumption.

Green tires

24 per cent of a vehicle's CO2 emissions are related to tires. Green tires reduce fuel consumption by 5 to 7 per cent and reduce CO_2 emissions by 1.2 kg CO_2/100 km. They reduce rolling resistance by up to 30 per cent. They also result in improved safety and durability. If all vehicles were equipped with green tires, it would result globally in a 50-million-ton reduction in CO2 annually. For the average person green tires bring a savings of around $100/yr in fuel costs.

Fuel Alternatives

Hydrogen - automotive fuel

Hydrogen is seen as one of the most promising future pathways to a lower carbon economy. Hydrogen can be used to fuel car, trucks, and buses powered by fuel cells, or hydrogen-fuelled internal combustion engines. This leads to GHG reductions from the vehicles through displacement of diesel engines.

Olin CHLOR ALKALI PRODUCTS

ERCO Worldwide
A division of Superior Plus LP

Methanol based marine fuels

methanex the power of agility

Metanol is a clean-burning marine fuel that can cost-effectively meet the shipping industry's increasingly stringent emissions regulations.Methanol can reduce or eliminate smog-contributing emissions, which can help improve air quality and related human health issues.

Lightweighting

Reducing a vehicle's weight by 100 Kg cuts its GHG emissions by 10 g/Km due to improved fuel efficiency. This represents a significant emission reduction potential considering that plastic components are often half the weight of similar aluminum parts, even more for steel. More than 10 million tons of plastics are already being used in car manufacturing.

Lightweight products

New polymers and high-tech plastics-based solutions, such as glass or carbon fiber, are designed to replace metal effectively in cars and airplanes without compromising performance, comfort or safety.

SOLVAY asking more from chemistry®

CCC

High performance adhesives and composite materials

High performance adhesives allow the use of lightweight plastics in automobiles which cannot be bonded by welding or soldering. Vestamelt adhesion even allows steel and plastic parts to be bonded to form hybrid materials. These are used in fuel filters and car doors. Plestiglas composite windshields also provide enhanced safety and make cars lighter.

EVONIK INDUSTRIES

4. Renewable Power

Chemistry enables nearly every renewable power generation source such as the composite materials in wind turbine blades,

solar panels, and even nuclear and hydro-power.

Solar Power

Today there is genuine urgency about reducing dependence on fossil fuels, yet demand for energy continues to grow. As populations and economies continue to expand, faster and broader adoption of solar will be required to meet renewable energy needs. Solar system installations are expected to grow at an average rate of 15 per cent over the next five years. The world needs dependable energy that's as reliable as the sun itself.

Photovoltaic Panels

DuPont solutions have transformed solar into a viable commercial energy source. Power output has improved by more than 30 per cent in the past 10 years with PV panels failure rates falling dramatically with new materials innovations. Today the same power can be generated with fewer panels and less panel space.

Wind Power

Chemistry allows manufacturers to produce blade components that are lighter, stronger, longer and more cost-effective.

Lubricants for Industrial Gears

The most important base oils for wind turbine gear are fully-synthetic high-viscosity polyalphaolefins. These lubricants extend the life of the fluids. By doing so, they reduce the need for oil changes.

Blade Protection

In the wind industry, blades require coating because they are constantly exposed to the weather and moving in air. Blade coatings reduce wind erosion, ensure long-lasting performance, and decrease maintenance and repair costs.

Batteries

Batteries convert electricity into chemical potential energy for storage and back into electrical energy as needed. With storage batteries power can be available 24 hours a day, regardless of weather. At the site of solar PV or wind turbines, batteries can smooth out the variability of flow and store excess energy when demand is low to release it when demand is high.

Lead-Acid Batteries

Sulfuric acid is a key material in the production of lead-acid batteries, the backbone behind alternative energy and related new technologies. These batteries have low maintenance requirements, low initial cost, and are widely available across the globe.

CHEMTRADE NorFalco

Rechargeable Batteries

The increased use of mobile technologies, electric vehicles, and renewable energies require the development of rechargeable batteries which are ever more efficient, light and robust. Through its development of polymers and components specifically designed for lithium-ion batteries, the Arkema group is providing energy storage specialists with effective solutions.

ARKEMA

5. Consumer Products

Low Temperature Detergents

This recent innovation has achieved excellent performance at much lower washing temperatures, resulting in significant energy reduction. In addition, the manufacturing of these new surfactants and enzymes result in a lower manufacturing CO_2 footprint and require a smaller volume to achieve the same results (generally one third of the volume for soap).

Detergents

Ethylene Oxide is one of the most versatile intermediate product used in the production of detergents, soaps, polyester fibres, antifreeze, textile finishing and in pharmaceutical preparations.

Stepan Fabric Softener

STEPANTEX®, is a readily biodegradable cationic fabric softener surfactants used in rinse-added and dryer sheet applications, which have instant cold water dispersibility, good rewetting and nonyellowing characteristics.

Pulp and Paper

Hydrogen Peroxide

PeroxyChem is a leading supplier of pulp and paper chemistries, and provides high value, versatile, clean and environmentally friendly bleaching agents that can be used to brighten chemical, mechanical and recycled pulps.

PeroxyChem

Recyclable Plastics

Recyclable Bottles

MEGlobal is a producer Ethylene Glycol an essential component in the production of polyethylene terephthalate (PET) resin, a recyclable plastic, such as soda and water bottles. Another major use is in the production of polyester fiber for clothes, upholstery, and carpet. MEGlobal captures its CO_2 and supplies it to a neighboring facility greatly reducing its climate change footprint.

Policy implications

In addition to the recommendations previously outlined, CIAC would like to offer the following recommendations to assist government in guiding the development of climate change regulation in the Canadian context. The Association supports evidence-based policy making that seeks to balance effective emissions reductions with the need to meet society's growing expectations for sustainable chemistry products and services.

Recommendation 10: *Identify the potential for emissions' reductions in sectors beyond manufacturing, which accounts for less than 30 per cent of GHG emissions, notably the buildings, transportation, food and renewable energy sectors.*

Recommendation 11: *Encourage market-based approaches capable of drawing on the contributions of chemistry to reduce emissions in other areas of the economy where market and investment leakage is less likely.*

Recommendation 12: *Align support for carbon-reduction technologies based on their maturity. Less mature technologies should receive more demonstration support while mature technologies should receive support for their increased deployment.*

Recommendation 13: *Recognize the global scope of chemistry companies in order to maintain market share and allow for ongoing capital injections.*

Recommendation 14: *Eliminate, or provide assistance to deal with, policy and regulatory barriers to the scaling up of low carbon solutions.*

Recommendation 15: *Leverage the funds collected through specific carbon pricing schemes to participate in public-private partnership programs to mitigate the high capital costs associated with low carbon technology, equipment or infrastructure replacement, new builds or retrofits.*

Recommendation 16: *Assist with public education and promotion of new low-carbon solutions.*

Recommendation 17: *Provide assistance during the development and deployment of pre-commercial emission reduction technologies in chemical manufacturing.*

Recommendation 18: *Mitigate investment risks and uncertainty by helping finance innovation and assisting in the commercialization of new and yet commercially unproven technologies keeping in mind that transformative solutions can deliver reductions over decades of use.*

Conclusion

CIAC member-companies are willing and well-positioned to continue to demonstrate a proactive approach to environmental protection, to resource conservation and to product development consistent with the Responsible Care® Ethic and Principles for Sustainability so they can contribute to improving the life of all Canadians.

Canada's chemistry sector is eager to work with governments and stakeholders to develop policy frameworks that address global climate change efforts and preserve the benefits of an efficient, modern and responsible domestic chemistry manufacturing industry.

Building on an abundance of natural resources, a well-educated workforce and a low carbon energy grid, Canada is uniquely positioned to take advantage of the industry's continuous stream of innovations to build a safe, prosperous and resilient sustainable economy.

Today, Canada's chemistry sector is poised for growth, thanks to new shale gas and biomass feedstocks and a growing market for chemistry-based solutions. Our industry could continue to bring safe, high-paying jobs to communities across the country. By working with the federal government to improve Canada's competitiveness, the chemistry industry hopes to continue delivering economic and environmental benefits for all Canadians.

CLIMATE CHANGE MITIGATION

If you have questions or comments, please contact:

Luc Robitaille
Vice-President Responsible Care®
Chemistry Industry Association of Canada
805-350 Sparks Street, Ottawa, ON K1R 7S8
lrobitaille@canadianchemistry.ca

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