Canada's Colleges and Institutes

Leading the Way to a Net Zero Carbon Future

April 2021

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Colleges and Institutes Canada (CICan) is the voice of Canada's publicly-supported colleges, institutes, cegeps and polytechnics, and an international leader in education for employment with ongoing programs in over **25** countries.

CICan's members add over **$190B** to Canada's economy each year and contribute to inclusive economic growth by working with industry and community partners to offer more than **10,000** programs to learners in urban, rural, remote, and northern communities.

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Executive Summary

Canada must adopt a new whole-of-country approach and quickly scale up a low carbon economy to meet its commitments to the environment while also recovering from the global pandemic. This challenge will require ingenuity in terms of developing new skills, seeking new business opportunities for Canadian companies, and innovating scientific and technological solutions within a green economy. With their extensive footprint, expertise in equipping learners with job-ready skills, and an applied research innovation pipeline to small and medium businesses (SMEs), Canada's colleges, institutes, cegeps and polytechnics are ideally positioned to support Canada's transition to a net zero future.

Our contributions to closing the gap for Canada rest on four pillars:

· Green skills for a net zero future

· Applied research and living labs

· Indigenous and nature-based solutions

· Leveraging our campuses

Leveraging these pillars enables colleges to promote green construction and manufacturing practices, help industry partners develop low carbon transportation and alternative energy sources, and lead environmental and sustainability initiatives in their communities.

To further advance these initiatives and help Canada achieve its net zero goals, colleges and institutes call on the government to:

- Support a green and inclusive recovery through a **$5B** stimulus investment in college infrastructure to make campuses more sustainable and accessible;
- Help prepare Canada's workforce by investing green skills modules for technical/trades training to support climate change adaptation and mitigation in key industries;
- Accelerate sustainability initiatives at colleges and in communities by investing **$100M over 5 years** in a new network of 50 College Sustainability Centres across Canada to empower colleges to mobilize their institutions, industry, and community partners to ramp up efforts towards Canada's net zero goals.

A new network of College Sustainability Centres will scale up reskilling and upskilling for the net zero economy, drive innovation with a net zero R&D lens, accelerate GHG emissions reductions, mobilize students to lead transformative initiatives and play a leadership role in communities in accelerating the drive towards net zero.

College campuses provide important living labs for many components of Canada's net zero future, including alternative energy, waste reduction, eliminating single use plastics, land and biodiversity stewardship, and sustainable food production. Colleges work best when tackling local community issues: when many of these interconnected factors come together in working with community partners, they are powerful in addressing local needs and climate resilience.

By drawing on its strengths in equipping learners of all backgrounds with job-ready skills and solving innovation challenges with applied research "at the speed of business," the college and institute system is ideally positioned to help lead Canada towards an equitable, sustainable post-pandemic economy and a net zero carbon future.

Introduction

Canada currently ranks 58th out of 61 countries on the Climate Change Performance Index.[1] And at 15.4 tonnes of CO2 emitted per capita, Canada ranks as one of the worst per capita Greenhouse Gas (GHG) emitters in the world (193 out of 208 countries rank better than Canada).[2] In the face of this urgency, Canada must adopt a new whole-of-country approach and quickly scale up a low carbon economy to meet its commitments to the environment while also recovering from the global pandemic. This challenge will require ingenuity in terms of developing new skills, seeking new business opportunities for Canadian companies, and innovating scientific and technological solutions within a green economy. With their extensive footprint, expertise in equipping learners with job-ready skills, and an applied research innovation pipeline to small and medium businesses (SMEs), Canada's colleges, institutes, cegeps and polytechnics are ideally positioned to support Canada's transition to a net zero future. Indeed, colleges are already seeing growing demand from students, businesses, community partners and municipal governments to share expertise, convene stakeholders to drive the response on climate action, reduce GHG emissions and strengthen community sustainability.

This paper outlines how the college system is ideally positioned to support Canada's goals to achieve net zero greenhouse gas emissions by 2050, while supporting its skilled workforce through the transition to a low carbon economy.

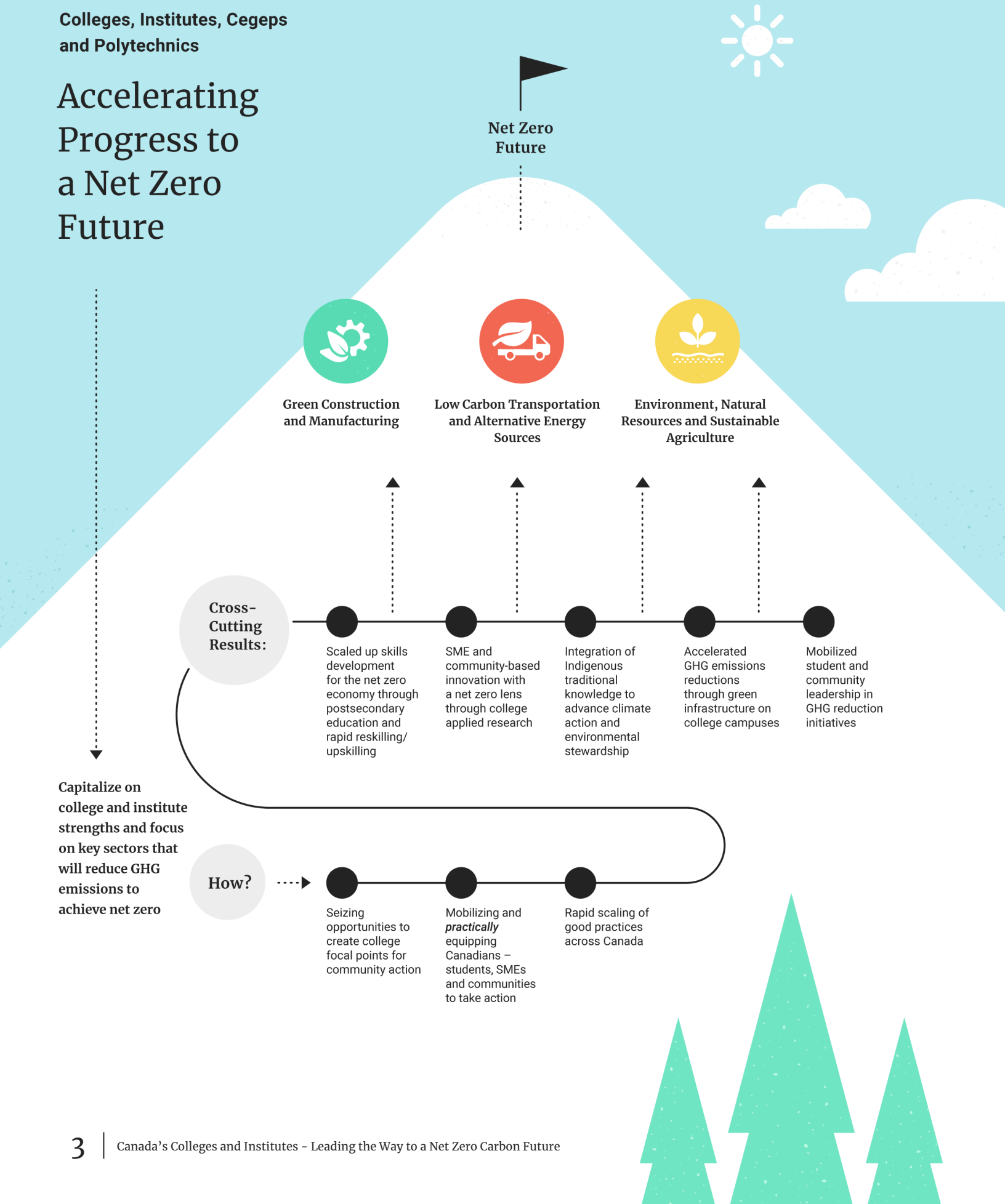
Our contributions to closing the gap for Canada rest on four pillars:

- **Green skills for a net zero future**
- **Applied research and living labs**
- **Indigenous and nature-based solutions**
- **Leveraging our campuses**

[1]Climate Change Performance Index, https://ccpi.org/ranking/
[2]Canada: CO2 Country Profile, https://ourworldindata.org/co2/country/canada.

Colleges, Institutes, Cegeps and Polytechnics

Accelerating Progress to a Net Zero Future



1. Canadian Colleges and Climate Action – a Recipe for Success

Colleges and institutes are found everywhere across the country. In fact, 95% of all Canadians and 86% of Indigenous peoples live within 50km of a college, institute, cegep or polytechnic.[3] These institutions are deeply integrated into the fabric of their local communities. The transition to a low carbon economy touches all Canadians, and the college system uniquely reaches into all corners of Canada, offering skills development, access to education – especially for underrepresented and vulnerable communities – and support for innovation through applied research partnerships with SMEs.

1.1 Green Skills for a Net Zero Future

The primary mission of colleges is to equip learners with job-ready skills for success in the labour market. In today's rapidly shifting post-pandemic landscape, students need more than formal training and credentials. The speed of economic disruption and technology adoption requires Canada to quickly reskill and upskill workers. The recent development of micro-credentials developed to meet the specific needs of employers and help people transition to new employment opportunities presents us with one such opportunity – particularly as we transition to a net zero future. Colleges also provide unique entry points to learning through Prior Learning Assessment and Recognition (PLAR) and innovative exit points through the development of accreditation programs and an emphasis on work-integrated learning (WIL) opportunities for all students.

Principle #3 of the report by the International Institute for Sustainable Development, Green Strings: Principles and Conditions for a green recovery from COVID-19 in Canada, recommends that "support should facilitate the retraining of workers for the green economy" and that "workers in transitioning sectors must be able to access skills training while they are on the job, and training must be portable so that credentials will be recognized by other employers."[4] All college programs across the country are developed with direct input from employers from business, industry and community partners represented on Program Advisory Committees that advise on the updating and developing new curriculum to ensure quality assurance and relevance for the job market. This is key to ensuring postsecondary programs pivot quickly to support rapid skills development for the transitioning to a low carbon economy.

Canada's ability to respond to evolving workforce needs and unexpected challenges by upskilling and reskilling workers, increasing workforce participation by underrepresented groups, and attracting international talent will continue to be a competitive advantage for Canada.[5]

[3]Hereafter, references to "colleges" refer collectively to publicly-assisted colleges, institutes, polytechnics, and cégeps.
[4]International Institute for Sustainable Development, Green Strings: Principles and conditions for a green recovery from COVID-19 in Canada, 2020, p.10
[5]Environment and Climate Change Canada, Healthy Environment Healthy Economy Plan, 2020, p. 49

1.2 Applied Research and Living Labs

The applied research centres at colleges play a critical role in Canada's innovation ecosystem – driving innovation and Canadian competitiveness in offering services such as technology transfer, commercialization, prototyping and product development, they help companies de-risk innovation and provide a critical link between the fundamental research performed at universities and the research and development challenges faced by the private sector. Partnered applied research solves innovation challenges at the "speed of business": In 2017-2018 applied research offices reported over 4,400 new processes, products, prototypes and services, 87% of which were completed in under one year. Colleges serve as local gateways to the innovation ecosystem for thousands of SMEs and community partners every year, specializing in research that is responsive to regional economies. In 2017-2018 alone, they reported over 7,300 research partnerships, 64% of them with SMEs, who often lack the resources, specialized technology and networks to solve innovation challenges on their own. College applied research is collaborative in nature and supportive of industry needs, with intellectual property (IP) remaining with the industry client. With 12% of all projects featuring clean technology (and 50% of all projects in natural resources featuring clean technology),

college applied research is an important ingredient in Canada's net zero future. Indeed, Canadian clean technology companies contribute more (16%) to Canada's GDP growth than their share of the whole economy (13%), with exports in this sector increasing 44% in the last 6 years.

By integrating skills development with applied research, college campuses serve as living labs in our collective move towards net zero. In de-risking innovation and providing business incubators and accelerators, colleges encourage new entrants into Canada's innovation ecosystem, including SMEs and entrepreneurs who offer novel and "proof of concept" approaches to decarbonizing our economy. As noted in the recent report released from the Canadian Institute for Climate Choices[6], the ability to develop and test new products and approaches, while reducing the financial risk, will be essential to Canada meeting its net zero targets.

1.3 Forward-Looking Solutions from Indigenous Traditional Knowledge

A significant component of reaching Canada's climate action and environmental stewardship goals also involves embracing Indigenous Climate Leadership by incorporating Indigenous ways of knowing in both land management and technology innovations. Canada's colleges have proven that they are committed to advancing Indigenous climate leadership, creating greater access and supports for indigenous learners and communities, and integrating indigenous knowledge across programs. Given the close partnership between colleges and Indigenous communities, colleges are ideally positioned to facilitate the integration of traditional knowledge in skills development and applied research with a view to contributing to Canada's climate goals.

1.4 Leveraging our campuses

The 135 members of Colleges and Institutes Canada have been at the forefront of sustainability discussions with corporate and community partners for many years – indeed communities often look to colleges for leadership, convening, and innovative ideas on sustainability. Students and faculty are engaged on sustainability issues as never before. But members now report that demand for such services far exceeds their capacity.

Colleges and institutes have also recognized that they can make a strong contribution to Canada's net zero goals by reducing carbon emissions on campus. CICan is currently leading a pilot project with 7 of our members – baselining, through a standardized approach, GHG emissions and then collaboratively finding solutions to meaningfully reduce. And we know we can do more – we currently have an inventory of over 300 shovel-ready projects that would reduce GHG emissions on campus in a timely way.

[6]Canadian Institute for Climate Choices, Canada's Net Zero Future, February 2021.

Campus-based Action:

Humber College (Ontario) embarked on Building NX to transform one of the campus's most inefficient buildings to an industry-leading example of zero carbon excellence. The project included a complete replacement of the building envelope with new 14-inch-thick walls, Passive House triple-pane windows, and a new Variable Refrigerant Flow (VRF) mechanical system, all installed while the building was occupied. The building is projected to use 63 ekWh/m2/yr making it one of the most efficient buildings in North America, and better than most cutting-edge new building projects, a feat thought to be impossible on a retrofit project. NX will see a 70% reduction in energy use that will help reduce the College's greenhouse gas emissions. With this project, Humber is developing industry-leading energy efficiency methodologies, including new performance benchmarks, scalable models for use by other institutions and programs to educate the next generation of sustainability professionals with every project.

Georgian College's (Ontario) Barrie and Owen Sound campuses are home to solar-powered electric vehicle (EV) charging bays used by staff, students, and the public. The stations help reduce Georgian's carbon footprint while providing research and learning opportunities for students – including a field study about the advantages and challenges of operating EVs in rural settings. Community partners Ford, PowerStream and Direct Energy helped make the stations possible.

Cégep Garneau (Quebec) is developing a sustainable commuting strategy that will align with the municipal sustainable transportation plan Cégep Garneau's strategic plan includes the development of a sustainable commuting plan to favour the use of public transportation, carpooling and cycling by students and staff. Currently under development, the plan will be aligned with Quebec City's sustainable transport (Mobilité durable) plan.

2. Colleges on the Cutting Edge of Net Zero Skills Training and Innovation

Transitioning to a net zero future will be extremely difficult. It does not happen overnight and requires many aspects of the economy to work together, including building retrofits, green transportation, sustainable natural resources, renewable energy and carbon storage. This section of the paper explores how colleges are currently using the "living lab" concept of integrating skills development and applied research to move the needle in these key net zero areas, including the need to integrate Indigenous traditional knowledge in a cross-cutting manner.

"Engage professional organizations, trades unions, colleges, universities, and manufacturers to assist with low-carbon skills development, including through continuing education." Recommended Steps: in "Trading up Equipping Ontario Trades with the Skills of the Future"[7]

2.1 Green Construction and Manufacturing

Progress in embodied carbon assessment and the use of carbon offsetting materials for retrofits and new buildings is also required. We need to ensure that **faculty in the technical and trades programs have knowledge of the latest technologies in deep energy retrofits**. The evolving convergence of industry-relevant training and curriculum for college programs, applied research and campus infrastructure serving as **"living labs"** shows that they remain on the leading edge.

Canada now has a great opportunity. College campuses are the home of engineering technology and trades programs, apprenticeship, and pre-apprenticeship programs, as well as demonstration sites for low carbon building and alternative energy to support green technical education and training. Over 100 colleges across the country offer 480 programs that support the manufacturing and construction sector.

Colleges also work with industry, in particular SMEs, through applied research that is directly connected to innovation in low carbow1n manufacturing processes and energy efficient building materials and methods. This creates a win-win situation where, supported by federal funding through programs such as the College and Community Innovation Program administered by the Natural Sciences and Engineering Research Council (NSERC), SMEs and other industry partners can develop new technology without taking on all the risk. Through engagement in applied research, faculty and students are exposed to the latest developments in low carbon building, such as material advances in insultation (e.g., cellulose, and hemp-based solutions) for deep energy retrofitting. This is good for the skills development ecosystem, the innovation ecosystem, and for Canada's net zero economic recovery.

Examples of Skills Development:

Niagara, Fleming, Durham, Nova Scotia Community College, and **Sault College** have integrated green technologies such as solar panels, geothermal heat pumps, wind turbines, rainwater capture, grey water systems, water and energy conservation technologies, and carbon neutral construction materials and methods in college buildings and/or renovations. **Northern, Lambton, Fanshawe, Fleming** and **Humber** have extensive green roofs and/or living walls, some of which are maintained by trades students.

[7]Canada Green Building Council, Trading Up: Equipping Ontario Trades with the Skills of the Future: Executive Summary, 2019, Executive summary.

Examples of Applied Research:

Red River College (Manitoba) Building Efficiency Technology Access Centre (BETAC) supports the building industry by helping clients address the challenges of designing and constructing durable, energy-efficient building envelopes, components, and assembly in an environment with extreme conditions. The core purpose is to support the needs of those involved in the design, construction, renovation, commissioning, and maintenance of a building's envelope.

Now more than ever, programs focusing on green skills utilize the campus infrastructure that provides real time data for applied research and innovation, while facilitating student learning. Consequently, continuing to invest in our green campuses serves to educate students to be green citizens and creates demonstration sites for the community in climate resiliency and a low carbon lifestyle.

2.2 Low Carbon Transportation and Alternative Energy Sources

Twenty-five percent of Canada's carbon emissions come from transportation[8]. A transition to low carbon transportation and energy entails making zero-emission cars and trucks more accessible and affordable; electrifying public transit networks and promoting active transportation. The low carbon evolution of heavy-duty vehicles, rail, marine technology and aviation, while making Canada a world leader in clean power, will achieve both GHG reduction and post-pandemic economic recovery goals.[9]

Building a stronger, cleaner transportation system as Canada recovers from the pandemic is an investment that will pay off—delivering economic and environmental benefits for decades to come.[10]

Colleges offer over 380 programs that support the transportation sector including automotive, aviation, aerospace, marine technology, mechanical and electrical engineering technology, automation, robotics, and manufacturing engineering technology. Low carbon transportation systems and alternative energy are being embedded in curriculum for technology programs.

Several Canadian college campuses are home to advanced curriculum and applied research in alternative energy sources, EVCs and lithium battery technology, as well as demonstration sites for low carbon and active transportation systems.

Examples of Skills Development:

Nova Scotia Community College's (Nova Scotia) Energy Sustainability engineering technology program has a unique partnership with industry for place-based education and learning innovation in energy management, and BCIT (British Columbia Institute of Technology) has partnered with-BC Hydro for a Sustainable Energy Management program funded by Natural Resources Canada – Office of Energy Efficiency

Camosun College (British Columbia) graduates of the Electronics & Computer Engineering Technology—Renewable Energy program leave the College with a broad knowledge of both electronics and computer engineering systems, enabling graduates to embrace high technology in all its forms, support local industry in maintaining current products and systems, and in creating the products of the future.

Programs offered at the college level include: Energy Systems Engineering Technician/Technologist' & Wind Turbine Technician Training (**Lethbridge College in Alberta**); Technologies des énergies renouvelables et rendement énergétique (**Cégep de Jonquière in Quebec**); Wind Turbine Technician, Solar Thermal Certification, Geoexchange Technician (**Northern Lights in BC**); Electronics and Computer Engineering Technology – Renewable Energy (**Camosun College in BC**); Energy Systems Engineering Technology – Clean & Renewable Energy (**Mohawk College**); Alternative Energy Technology (**NAIT in Alberta**) Renewable Energy Technology and Energy Efficiency (**Cégep de Jonquière**) and **St. Lawrence College**'s stackable credentials in alternative energy.

[8]Environment and Climate Change Canada, Greenhouse gas sources and sinks, executive summary, 2020.
[9]Environment and Climate Change Canada, Healthy Environment Healthy Economy Plan, 2020.
[10]Environment and Climate Change Canada, Healthy Environment Healthy Economy Plan, 2020, p. 15.

Cégep Edouard-Montpetit (Quebec): Aircraft maintenance technician programs include components on GHG emissions and alternative fuels.

College Boreal (Ontario) is offering a new program in Electric Vehicle maintenance in partnership with Epiroc, and furthering education for the growing field of electrification in mining with a focus on batteries, electric drivetrains, battery equipment and energy storage.

Examples of Applied Research:

Red River College's (Manitoba) Zero Emissions Public Transit project tests electric buses and rapid charging systems, particularly in cold climates, in support of affordable public transit, GHG reduction and efficient renewable energy, while creating jobs.

Norquest (Alberta) works in partnership with the Drayton Valley Community Learning Association and the Town of Drayton Valley to build a Clean Energy Technology Centre and position the area as a clean energy leader. Focus is on research and clean energy, corporate training, and business development.

Many college campuses serve as "active transportation living labs" by leading by example for their local communities. When colleges open corridors for alternative modes of transportation for their students and staff, whether they are active transportation route such as bike trails, or public transit, they create corridors for the whole community. This contributes significantly to community access, economic development and GHG reduction.

Public transit can help set Canada on a path to net zero by 2050 by enabling the development of compact livable communities around transit stations and corridors.[11]

2.3 Environment, Natural Resources and Sustainable Agriculture

Colleges have a long history of delivering environmental and natural resource management programs that engage students in hands-on applied learning while working to protect the natural environment and biodiversity in Canada's different regions. Traditional programs such as Environmental Management, Conservation Biology, Restoration Ecology, fisheries, marine programs, and forestry are increasingly focusing on climate resilience and adaptation and applied research in ecosystem restoration. Applied research in the college system has a particular focus on species at risk from a changing climate. Work in the north, which is most vulnerable to the changing climate, includes wetlands restoration in northern Alberta by Grande Prairie Regional College, and winter planting for enhancing wetland reclamation for oil sands. Numerous agricultural programs offered at colleges and institutes have a focus on sustainable agricultural practices using no-till technology to reduce soil compaction to increase the ability of the soil to absorb carbon. Many of these programs utilize the infrastructure of on-campus farms that serve as applied learning environments and provide real time data for applied research and innovation. These initiatives are connected to sustainable food production and waste management for the full circular food system on campus – initiatives that both serve to educate students and stand as demonstration sites for the community in climate resiliency.

Examples of Skills Development:

North West College (Saskatchewan): Diploma in Applied Coastal Ecology ladders into Environmental Science, Forest Conservation, BSc Integrated programs. **Fleming College (Ontario)**: joint diploma-degree with Trent University in Ecological Restoration.

[11]Environment and Climate Change Canada, Healthy Environment Healthy Economy Plan, 2021, p. 17

Examples of Applied Research:

College of New Caledonia (British Columbia): Tackling the effects of climate change on BC forests. **NAIT (Alberta)**: NSERC Research Chair in Peatland Restoration (since January 2013) and **Aurora College (Northwest Territories)**: Applied Permafrost Research Lab – preparedness in the North via permafrost monitoring and mitigation to climate change.

SAIT (Alberta) – ARIS applied research – unmanned Aerial Vehicle – drones for environmental assessment and monitoring

The college "living lab" ecosystem of applied research, on site infrastructure and hands-on training, is an ideal place to invest to tackle the dual crisis of climate and biodiversity loss, while embracing indigenous climate leadership in land management.

2.4 Advancing Indigenous Climate Knowledge

Canada must support training the upcoming generation for low carbon jobs. With the Indigenous population the fastest growing population in Canada (Statistics Canada, 2017), there are also the dual benefits in addressing future youth jobs in parallel with reconciliation to ensure that Indigenous youth are able to acquire skills for green economy in line with their cultural practices.[12]

Canadian colleges and institutes have proven that they are committed to advancing Indigenous climate leadership, creating greater access and supports for Indigenous learners and communities, and integrating Indigenous knowledge across programs. With the broad array of environmental and natural resource management programs, this positions the system well to work with Indigenous communities in climate mitigation, adaptation and developing carbon offset protocols through Indigenous approaches to protecting Canada's lands and biological resources. Colleges and Institutes Canada (CICan) is well positioned to ensure that these best practices within the system are developed across Canada.

The ***CICan Indigenous Education Protocol*** provides a framework towards reconciliation for all colleges and a commitment to make Indigenous education a priority with a view to breaking down barriers to education and offering a culturally welcoming environment for Indigenous peoples. Examples of how this translates to each institution include an Indigenous Education Council, on-campus Indigenous Elders and faculty and bringing specialized training to remote communities. Thanks to their close partnership with Indigenous communities across Canada, many colleges are already indigenizing their curriculum and using traditional knowledge to guide environmental programming.

Indigenous knowledge is also being woven across curriculum, particularly environmental programs. For example, the School of Natural Resource Sciences at Fleming College requires all first-year diploma students to take an Indigenous studies course.

[12]International Institute for Sustainable Development, Green Strings: Principles and conditions for a green recovery from COVID-19 in Canada, 2020, p.10

Examples of Indigenous curriculum, Indigenous learner supports, and Indigenous partnerships in net zero initiatives:

Yukon University (Yukon) is requiring that all students achieve core competency in knowledge of Yukon First Nations

First Nations Technical Institute (Ontario) has been instrumental in advancing indigenous ways of knowing in value systems, land management, and food production systems.

North Island College (British Columbia): "Aboriginal Education and Indigenization"; includes developing and implementing an Aboriginal Education Policy and action plans; ensuring governance structures recognize and respect Indigenous peoples, implementing intellectual and cultural traditions of Indigenous peoples throughout curriculum and learning; increasing the number of Indigenous employees; promoting understanding and reciprocity among Indigenous and non-Indigenous people; enhancing Indigenous-centered services and building relationships with Indigenous communities

Northern College (Ontario): incorporation of Aboriginal Traditional Knowledge (ATK) across the curriculum. student support and success tools designed to attract and retain Aboriginal learners.

Northwest College (British Columbia): integration of First Nations environmental principles into curriculum and teaching practice. Programming in Environmental Monitoring, Field Schools in Environment Science and Geography inclusive of First Nations traditions and environmental principles and support them at all stages in post-secondary educational attainment.

University College of the North (Manitoba): development of an Industrial Skills Trades and Training Centre (ISTTC) to ensure First Nations, Métis and Inuit populations have access to skilled trades training in multiple areas, including renewable energy

Canadore College (Ontario): Aboriginal Women in the Trades program (a 12-week certificate program covering building construction, electrical, plumbing, and carpentry).

Saskatchewan Polytechnic (Sasktachewan): programs providing essential skills, water treatment training to Indigenous People, partner with Saskatoon Tribal Council, for kanatan nipig (the water is clean/clean water program)

The Chisasibi First Nation in northern Quebec is working with **cegep de Victoriaville (Quebec)** and its Centre for Social Innovation in Agriculture to apply traditional knowledge to solve food security problems with a multi-faceted, holistic approach that considers the history, culture and political factors that have shaped Chisasibi's reality.

3. Moving Knowledge to Action to Drive to Net Zero

One of the main findings of the report by the Canada Green building Council is that "technical skills alone will not satisfy the requirements of low-carbon buildings."[13] There is a need for broad-based "green literacy" skills – the ability to understand the broad implications of key building activities on the environment and "a broader ecological mindset and awareness."[14] This applies to all sectors and postsecondary programs and requires green skills that are transdisciplinary, meaning that every job is a green job.

In recognition that green skills are more than simply technical skills, colleges are increasingly making advances integrating sustainability and low carbon knowledge with skills across all curriculums, through whole-of-institution approaches that transform green technical education and training. These are often supported by institutional Offices of Sustainability that have a cross-cutting and multidisciplinary mandate to help academic departments weave sustainable best practices into all sections of student and campus life. Examples include green learning outcomes, facility operations, community development and supporting climate action including best practices in greenhouse gas reduction.

As a result, for Budget 2021, CICan made several key recommendations, calling on the federal government to:

- Support a green and inclusive recovery through a **$5B** stimulus investment in college infrastructure to make campuses more sustainable and accessible;
- Help prepare Canada's workforce by investing green skills modules for technical/trades training to support climate change adaptation and mitigation in key industries;
- Accelerate sustainability initiatives at colleges and in communities by investing **$100M over 5 years** in a new network of 50 College Sustainability Centres across Canada to empower colleges to mobilize their institutions, industry, and community partners to ramp up efforts towards Canada's net zero goals.

3.1 Growing a Network of College Sustainability Centres

Realizing Canada's commitment to the 2030 Agenda is a massive challenge which will not be met with incrementalism. An enhanced, bold new approach is needed – building on what exists and using college and institute infrastructure as a catalyst. Establishing a network of campus-based College Sustainability Centres will create an accelerator to make Canada more resilient and better equipped to deal with the next global crisis. It builds on successful models of college-led collaborations that connect local problems to institutional assets for community betterment. An investment of **$100M over 5 years** to establish a network of 50 College Centres ($400,000 annually for each centre) would capitalize on this existing leadership capacity, to develop and share **good practices, scaling rapidly to benefit Canada's youth, businesses, and communities**.

This will enable **individual institutions – both newly engaged and those with a long-standing commitment to sustainability** - to use existing blueprints of successful initiatives, adapt them to their culture and region, and create sustained implementation of scalable positive change through four dimensions – **social infrastructure, skills development, applied research and community engagement**. The following case study illustrates the co-benefits of partnerships between a college, the local municipality, an NGO, and the business sector to mobilize a ready workforce and simultaneously tackle issues of local food insecurity and climate change.

[13]Canada Green Building Council, Trading Up: Equipping Ontario Trades with the Skills of the Future: Executive Summary, 2020, p. 3
[14]Ibid, pg.4

Fleming College's Sustainability staff facilitated **community engagement** of local stakeholders to implement a plan to combat food insecurity and improve nutrition for children at risk in the City of Kawartha Lakes. Fleming provided the **Social infrastructure**, knowledge and equipment, to make the Edwin Binney's Community Garden a reality through partnerships between Fleming's Sustainable Agriculture program, Crayola Canada who donated 30,000 square feet of vacant land, and the local United Way. The result has been food production – over 10,000 lbs of food in 2020 for 11 local food banks and 10 charitable organizations, applied **skills development** for college students and community members, and **applied research** for sustainable agriculture practices and seed propagation for climate change resilience. This is an example of how Sustainability Offices can broker community collaborations by building on each institution's existing relationships, and prior to the pandemic, plans were underway to scale this solution to other jurisdictions experiencing food insecurity and the agricultural effects of climate change.

Committing to the establishment of 50 networked regional College Sustainability Centres in every type of community in Canada (urban, rural, northern, coastal, etc.), supported by a national secretariat as a **one stop hub**, would catalyze action across the system and significantly accelerate and deepen the impact colleges can have on the sustainability agenda. Canada's 150 publicly-supported colleges and institutes would help their communities immediately fast-track the actions needed to meet Canada's sustainabilty goals and the drive to net zero by 2050. This will include community awareness, education and engagement to mobilize GHG reductions initiatives across the country. By inspiring and networking with their fellow colleges, these 50 centres will leverage the capacity of the college system to reach over 95% of the Canadian population in the communities where they live.

The key outcome of this investment is to meaningfully accelerate the drive to net zero and sustainability goals more broadly. This will be achieved by:

- Mobilizing and ***practically*** equipping Canadians – students, SMEs and communities to take action
- Rapid scaling of good practices across Canada
- Seizing business opportunities.

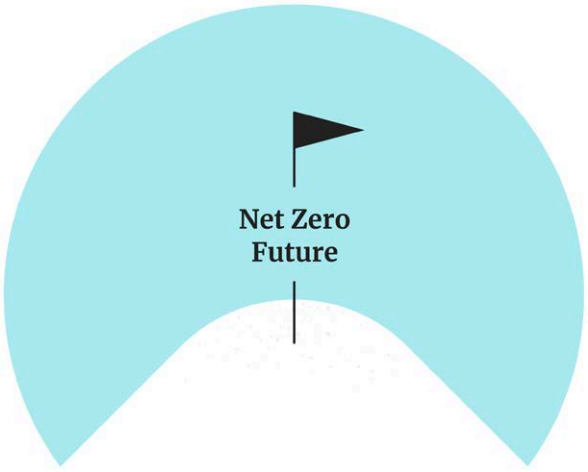
Activities will tap into college and institute strengths and will focus on key sectors that will reduce GHG emissions to achieve net zero including construction; transportation and energy; clean technology and natural environment management (water, land, reforestation).

The cross-cutting results will include:

- Scaled up skills development for the net zero economy through postsecondary education and rapid reskilling/upskilling
- SME and community-based innovation with a net zero lens through college applied research
- Integration of Indigenous traditional knowledge to advance climate action and environmental stewardship
- Accelerated GHG emissions reductions through green infrastructure on college campuses
- Mobilized student and community leadership in GHG reduction initiatives

This network can serve as a go-to place for government implementation of climate action policy, as well as a resource for government to understand what is happening on the ground and disseminate government priorities by serving as a pipeline to Canadians and their communities.

Conclusion



CICan's commitment to sustainability is longstanding and is perfectly positioned to mobilize the college system and deliver on this. CICan has been inspiring and collaborating with our 135 member institutions in every province, territory and region of Canada since the 1990's to protect our environment. In 2007 CICan held a symposium on Environmental Sustainability that resulted in the 2009 Pan-Canadian Protocol for Sustainability, signed by 59 institutions. Since that time, many of our members have invested significantly in climate actions. However, more awareness and knowledge is needed to meet Canada's Paris Accord commitments and the UN Sustainable Development Goals. In 2019 CICan launched a pan-Canadian working group of member institutions to identify further needs with respect to sustainability and pilot the tracking and measurement of GHG emissions on a common platform. In 2021, CICan was highlighted as a Canadian Spotlight for our contributions to the SDGs in the National 2030 Agenda Strategy for Canada, and as a Sustainable Association Case Study demonstrating leadership in sustainability.[15] With the recent signing of the SDG Accord, CICan looks to further collaborating with our national and international partners in moving Agenda 2030.

College campuses provide important living labs for many components of Canada's net zero future, including alternative energy, waste reduction, eliminating single use plastics, land and biodiversity stewardship, and sustainable food production. Colleges work best when tackling local community issues: when many of these interconnected factors come together in working with community partners, they are powerful in addressing local needs and climate resilience.

By drawing on its strengths in equipping learners of all backgrounds with job-ready skills and solving innovation challenges with applied research "at the speed of business," the college and institute system is ideally positioned to help lead Canada towards an equitable, sustainable post-pandemic economy and a net zero carbon future.

[15]Strandberg Consulting (2021). The Sustainable and Just Association: The Role Associations Can Play to Help their Members Accelerate a Just and Sustainable Future.

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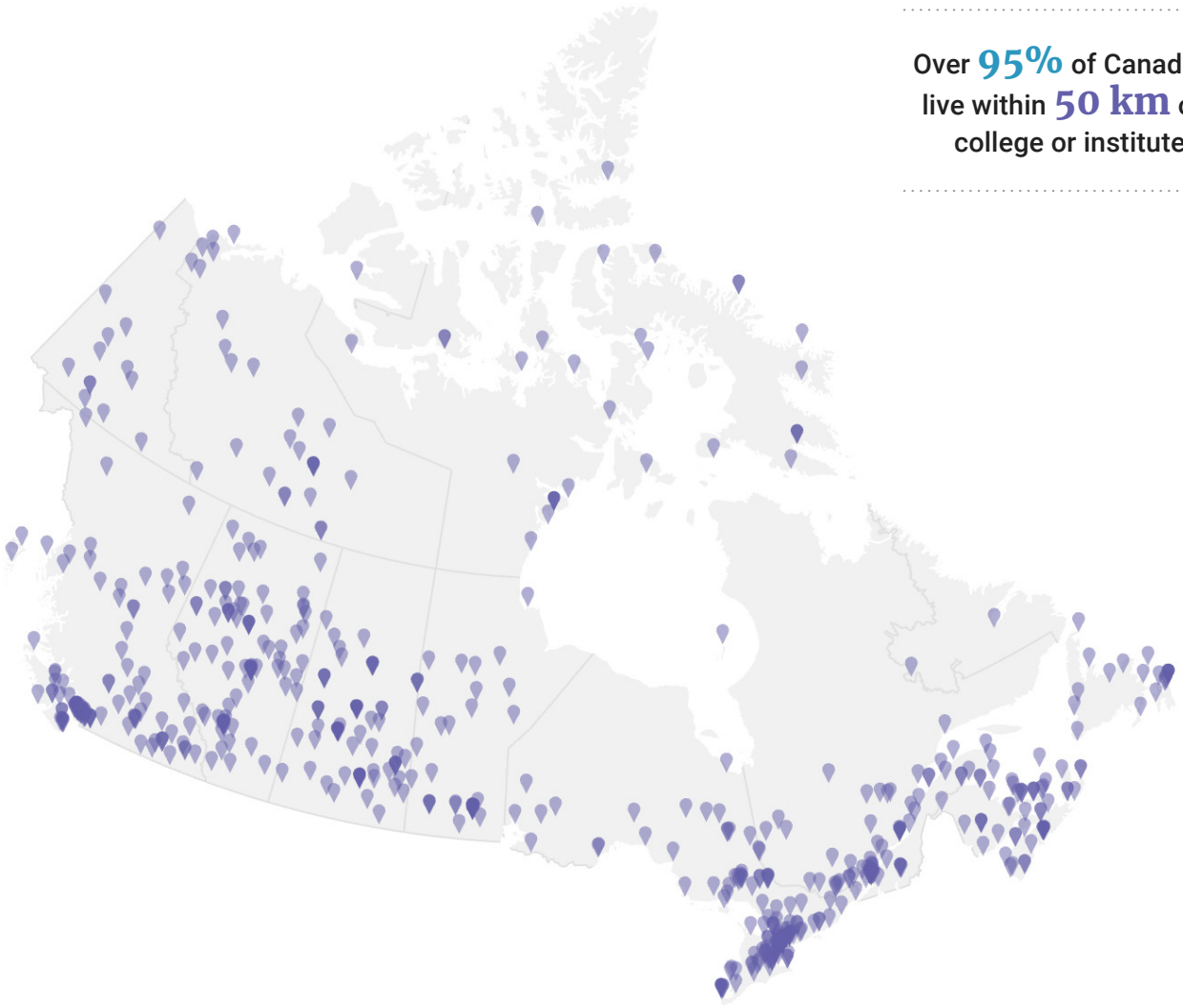
CICan Member Colleges and Institutes in Canada

Over **95%** of Canadians live within **50 km** of a college or institute.



This **extensive network** of post-secondary institutions serves students from all over the country where they live, whether it's in **urban, rural, northern or remote communities**, thanks to **more than 680 campuses or facilities** across Canada.

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collegesinstitutes.ca/members

CICan Member Colleges and Institutes in Canada

Yukon
- Yukon University

Northwest Territories
- Aurora College
- Collège Nordique Francophone*

Nunavut
- Nunavut Arctic College

British Columbia
- British Columbia Institute of Technology (BCIT)
- Camosun College
- Capilano University
- Collège Éducacentre*
- College of New Caledonia
- College of the Rockies
- Douglas College
- Justice Institute of British Columbia
- Kwantlen Polytechnic University
- Langara College
- Native Education College**
- Nicola Valley Institute of Technology(NVIT) **
- North Island College
- Northern Lights College
- Coast Mountain College
- Okanagan College
- Selkirk College
- Thompson Rivers University
- University of the Fraser Valley
- Vancouver Community College
- Vancouver Island University (VIU)

Alberta
- Bow Valley College
- Centre collégial de l'Alberta*
- Grande Prairie Regional College (GPRC)
- Keyano College
- Lakeland College
- Lethbridge College
- Medicine Hat College
- NorQuest College
- Northern Alberta Institute of Technology (NAIT)
- Northern Lakes College
- Olds College
- Portage College
- Red Deer College
- SAIT

Saskatchewan
- Carlton Trail College
- Collège Mathieu*
- Cumberland College
- Dumont Technical Institute**
- Great Plains College
- North West College
- Northlands College
- Parkland College
- Saskatchewan Indian Institute of Technologies**
- Saskatchewan Polytechnic
- Southeast College

Manitoba
- Assiniboine Community College
- École technique et professionnelle, Université de Saint-Boniface*
- Red River College
- University College of the North
- Manitoba Institute of Trades and Technology

Ontario
- Algonquin College
- Cambrian College
- Canadore College
- Centennial College
- Collège Boréal*
- Conestoga College Institute of Technology and Advanced Learning
- Confederation College
- Durham College
- Fanshawe College
- First Nations Technical Institute**
- Fleming College
- George Brown College
- Georgian College
- Humber College Institute of Technology & Advanced Learning
- Kenjgewin Teg Educational Institute (or KTEI)**
- La Cité*
- Lambton College
- Loyalist College
- The Michener Institute of Education at UHN
- Mohawk College
- Niagara College
- Northern College
- Sault College
- Seneca College
- Sheridan College
- Six Nations Polytechnic**
- St. Clair College
- St. Lawrence College

Quebec
- Cégep André-Laurendeau*
- Cégep de Chicoutimi*
- Cégep de Jonquière*
- Cégep de l'Abitibi-Témiscamingue*
- Cégep de la Gaspésie et des Îles*
- Cégep de La Pocatière*
- Cégep de Matane*
- Cégep de Saint-Félicien*
- Cégep de Sainte-Foy*
- Cégep de Saint-Jérôme*
- Cégep de Saint-Laurent*
- Cégep de Sept-Îles*
- Cégep de Sherbrooke*
- Cégep de Trois-Rivières*
- Cégep du Vieux Montréal*
- Cégep Édouard-Montpetit*
- Cégep Garneau*
- Cégep Limoilou*
- Cégep Marie-Victorin*
- Cégep régional de Lanaudière*
- Cégep Rivière du Loup*
- Cégep Saint-Jean-sur-Richelieu*
- Champlain Regional College
- Collège Ahuntsic*
- Collège André Grasset*
- Collège d'Alma*
- Collège de Bois-de-Boulogne*
- Collège de Maisonneuve *
- Collège de Rosemont*
- Collège LaSalle*
- Collège Montmorency*
- Collège Shawinigan*
- Cégep Heritage College
- Dawson College
- John Abbott College
- Vanier College

* **Francophone**
** **Indigenous**

Newfoundland and Labrador
- Centre for Nursing Studies
- College of the North Atlantic
- Fisheries and Marine Institute of Memorial University of Newfoundland

New Brunswick
- Collège communautaire du Nouveau-Brunswick (CCNB)*
- Maritime College Forest Technology
- New Brunswick College of Craft and Design
- New Brunswick Community College (NBCC)

Prince Edward Island
- Collège de l'île*
- Holland College

Nova Scotia
- Cape Breton University
- Dalhousie Agricultural Campus, Dalhousie University
- Nova Scotia Community College
- Université Sainte-Anne*

Associates

- Association des collèges privés du Québec*
- Association québécoise de pédagogie collégiale*
- Atlantic Provinces Community College Consortium (APCCC)
- BC Colleges (BCC)
- Canadian Association of Diploma in Agriculture Programs (CADAP)
- Colleges Ontario
- Fédération des cégeps*
- Forum for International Trade Training (FITT)
- Horatio Alger Association of Canada
- Indigenous Institutes Consortium
- Inter-American Organization for Higher Education (IOHE)
- Regroupement des collèges du Montréal métropolitain (RCMM)
- Synchronex*
- Tra Vinh University

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