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Project Insights Report

Decarbonization Pathways for the Green Building Workforce

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Executive Summary

Canada's green building sector is at a critical inflection point. As climate risks intensify, housing affordability pressures mount, and labour shortages persist, the sector is being asked to deliver emissions reductions, expand housing supply, and sustain economic growth at the same time. Buildings account for a substantial share of national greenhouse gas emissions, yet progress on decarbonization, particularly in residential buildings, has been uneven. At the same time, the transition to a low-carbon built environment presents a major economic and workforce opportunity if enabling conditions are aligned.

This project assessed the economic, environmental, and social contributions of Canada's green building sector, with a particular focus on growth potential, decarbonization pathways, and workforce implications. Building on previous market assessments, the research combined economic and emissions modelling with a literature review, interviews, surveys, and focus groups to examine how different policy and decarbonization trajectories shape jobs, GDP, and demand for skilled trades.

The findings show that the green building sector is already a major economic engine. In 2024, it generated $81 billion in direct GDP and supported more than 500,000 direct jobs, rising to over $150 billion in GDP and more than one million jobs when indirect and induced impacts are included. Decarbonization activities account for roughly one-quarter of this economic value, while building emissions have declined over the past several years—demonstrating that emissions reductions and growth are advancing together. Scenario analysis indicates that current policies will deliver only modest gains, whereas a coordinated high-decarbonization pathway could nearly double sector GDP and employment by 2030.

The research also identifies workforce capacity as the primary constraint on scaling progress. Shortages in key trades, misaligned training systems, and stop-start funding undermine delivery, while retention—especially of underrepresented groups—remains a critical challenge.

Overall, the project shows that coordinated, long-term policy, financing, and workforce strategies are essential to unlocking the full climate, housing, and economic potential of Canada's green building sector.

KEY INSIGHTS

1. In 2024, Canada's green building sector generated $81 billion in direct GDP and supported over 500,000 direct jobs, rising to more than $150 billion in GDP and over one million jobs when indirect and induced impacts are included.

2. The research shows that policy stability and coordination—not technology—are the decisive factors shaping decarbonization outcomes, workforce investment, and economic growth in the green building sector.

3. Workforce shortages, especially in HVAC-R, electrical, controls, and retrofit roles, are the primary constraint on scaling decarbonization, and predictable multi-year funding paired with paid mentorship is essential to training and retaining the workforce needed to meet climate targets.

The Issue

Canada's green building sector is under mounting pressure to deliver on multiple, intersecting priorities. The sector is expected to rapidly reduce greenhouse gas emissions to meet national climate targets, expand housing supply amid a persistent affordability crisis, and sustain economic growth in a volatile construction market. Buildings are Canada's third-largest emitting sector, responsible for approximately 13% of national greenhouse gas emissions, rising to 18% when energy use is included, and up to 30% when construction and materials are considered. Despite this significance, progress on building decarbonization, particularly in the residential sector, has been uneven and slower than required to align with climate goals.

Concurrently, the construction and building workforce faces growing constraints. Labour shortages, rising costs, demographic pressures, and fragmented, short-term policy approaches limit the sector's ability to scale low- and zero-carbon construction and retrofit activity. Decarbonizing Canada's building stock will require widespread adoption of new construction practices, energy systems, and materials, alongside significant upskilling across building trades and professions. While Canada's green building industry already employs approximately 460,000 workers, demand for skilled labour is projected to grow sharply. Estimates suggest that green retrofits alone could generate between 777,000 and 2 million direct jobs by 2050, with substantial contributions to GDP and investment. However, the distribution of these impacts across trades, regions, and time horizons remains insufficiently understood.

Market and regulatory conditions further intensify the challenge. Climate risk has become a central concern for insurers, investors, and regulators, as record-high weather-related losses highlight vulnerabilities in the built environment. In response, capital is increasingly directed toward resilient, high-performance, low-carbon buildings. Demand for such assets, especially in commercial and institutional markets, is rising faster than current and projected supply. Yet the enabling conditions needed to scale delivery are developing unevenly. Long-term funding mechanisms, consistent policy signals, and accessible financing tools are not yet available at the scale required to catalyze widespread adoption across jurisdictions and market segments.

These dynamics expose a critical knowledge gap. While decarbonization pathways for buildings are increasingly well defined, there is limited, up-to-date, and integrated evidence on how different policy, investment, and market trajectories will affect the building workforce. Without a clear picture of how decarbonization will reshape demand for specific skills, occupations, and training pathways, investments in workforce development risk being misaligned with emerging needs.

Addressing this gap is essential. Coordinated progress across policy, financing, and workforce development is required to translate climate ambition into durable economic and employment outcomes. A comprehensive, evidence-based understanding of how decarbonization pathways interact with labour demand will support more effective decision-making and help ensure that Canada's green building transition delivers on its climate, housing, and economic objectives.

What We Investigated

This research project assessed the economic, environmental, and social impacts of Canada's green building sector, with a primary focus on measuring the sector's economic contribution (GDP) and its role in sustainable job creation. The project built on previous iterations of this work, including the original market assessment conducted in 2016, the foundational methodology established in the 2020 edition, and the 2022 *Green Retrofit Economy Study*. The 2025 research expanded the scope to reflect emerging sector priorities, particularly the need for an inclusive workforce and a clearer understanding of labour requirements associated with low-carbon growth in the construction and building sectors. The research was conducted to support decision-makers with timely, evidence-based insights into how the green building sector contributes to climate objectives while advancing equitable economic opportunity.

At the core of the project was an examination of how likely decarbonization pathways shape demand for and supply of skilled trades within Canada's green building sector. As efforts to scale housing supply and low-carbon construction accelerate, there is a growing need to understand evolving workforce requirements, including the occupations, skills, and demographic considerations that define a future-ready workforce. The research also investigated how underrepresented groups currently participate in the green building workforce and what strategies can strengthen inclusion as the sector grows.

The study was designed to answer the following research questions:

1. What is the growth potential for Canada's green building industry over the next 5 years?
2. What are the economic, environmental, and social contributions of Canada's green building industry, and what factors must be considered to optimize impact?
3. How can Canada's green building industry increase participation of underrepresented groups in the workforce and support a just transition?
4. How can Canada's green building industry help Canada meet its climate targets?
5. What are the key market trends and drivers accelerating Canada's shift to high-efficiency, zero-emissions buildings?
6. What are the decarbonizing pathways in Canada that affect demand for and supply of skilled tradespeople?

To address these questions, the project applied a mixed-methods approach between 2024 and 2025, integrating quantitative economic and greenhouse gas emissions modelling, secondary research, and primary qualitative methods. A macro-economic model based on Statistics Canada's input-output framework was developed to estimate growth potential under baseline, medium, and high decarbonization scenarios. Secondary research informed all questions and was complemented by interviews, surveys, and focus groups with industry experts and stakeholders. Focused consultations explored inclusion, labour pathways, and workforce readiness, particularly for underrepresented groups.

This approach was chosen to align robust economic modelling with grounded, sector-specific insights, ensuring the findings reflect both market realities and workforce implications across Canada's green building ecosystem.

✔ What We're Learning

Canada's green building sector is already a major economic contributor, but future growth is highly sensitive to policy ambition and alignment

The research showed that in 2024, the green building sector generated more than $81 billion in direct GDP and supported over 500,000 direct jobs across construction and trades, manufacturing, professional services, utilities, waste and recycling, and policy and education. When indirect and induced effects are included, the sector contributes over $150 billion in GDP and more than one million jobs nationally, underscoring its role as a cornerstone of Canada's economy. Scenario modelling demonstrated that maintaining the current policy trajectory would result in only incremental gains—approximately 100,000 new jobs and $17 billion in additional GDP by 2030. In contrast, a coordinated, high-decarbonization pathway could nearly double sector GDP to $146 billion and double employment, illustrating that long-term policy stability and alignment are the primary drivers of economic outcomes.

Building decarbonization delivers measurable emissions reductions while functioning as an economic growth engine

Approximately one-quarter of current green building GDP (about $20 billion) is directly linked to decarbonization activities, including heat pump deployment, electrification of heating, renewable energy integration, and deep retrofits. National data show that onsite building emissions have declined by more than 10% since 2018, alongside a 29% reduction in electricity-sector emissions, reflecting the combined effects of improved building efficiency and grid decarbonization. Progress has been strongest in commercial and institutional buildings, supported by stronger codes and performance standards. However, residential buildings remain significantly off track, with retrofit rates and average energy savings falling well below levels required to meet climate targets. The findings highlight that without predictable, long-term funding and financing mechanisms for residential retrofits, emissions reductions and associated economic benefits will remain constrained.

Policy coordination determines whether decarbonization potential is realized or stalled

The scenario analysis revealed that ambition alone is insufficient; outcomes depend on how well policies, financing, and market signals are coordinated over time. Stop-start programs, short funding cycles, and inconsistent policy signals weaken investment confidence and slow adoption, even when technologies are mature and cost-effective. In the high-decarbonization scenario, stable multi-year funding, national-equivalency codes, and aligned federal–provincial–municipal actions significantly increase GDP and employment gains, particularly in construction and skilled trades. These results demonstrate that decarbonization pathways are technically feasible, but their economic and climate benefits are only realized when enabling conditions move together.

Workforce capacity is the most significant constraint on scaling both decarbonization and housing delivery

Across quantitative modelling and qualitative engagement, workforce shortages emerged as the primary bottleneck. The research identified acute gaps in HVAC-R, electrical trades, building automation and controls, envelope retrofit, commissioning and re-commissioning, and building operations—roles that are essential for electrification and high-performance buildings. While the sector added approximately 40,000 direct jobs since 2018, this growth has not kept pace with projected demand under accelerated decarbonization scenarios. Stakeholders consistently emphasized that training systems are not aligned with emerging skill requirements, particularly interdisciplinary skills that integrate mechanical, electrical, and digital systems. Without structural changes to how training is funded and delivered, labour shortages will continue to limit sector growth.

Financing stability and workforce development are deeply interconnected
Engagement with industry stakeholders revealed that contractors, especially small and medium-sized firms, are unlikely to invest in training or apprenticeships without predictable project pipelines. Stop-start incentive programs and changing program rules undermine employers' ability to plan, hire, and upskill workers. Even modest increases in financing costs were reported to delay or cancel retrofit investments, reducing both job creation and training opportunities. The findings reinforce that workforce readiness cannot be addressed in isolation: stable financing, synchronized permitting and grid upgrades, and multi-year retrofit pipelines are prerequisites for sustained workforce investment.

Retention, rather than recruitment, is the central challenge for building an inclusive green building workforce
The project engaged 14 industry interviews, two focus groups, and a national survey of 111 respondents to examine inclusion and workforce participation. While recruitment initiatives have expanded entry into the trades, participants consistently reported high attrition among underrepresented workers within the first few years. Barriers included jobsite culture, inconsistent supervision, task gatekeeping, limited mentorship, and unclear advancement pathways. Evidence from both the literature and stakeholder engagement showed that structured, paid mentorship and inclusive supervisory practices are the most effective levers for improving retention. These findings indicate that inclusion is not a peripheral concern, but a core workforce strategy necessary to meet labour demand.

Decarbonization, workforce reform, and inclusion must advance together to unlock full impact
A key lesson from the project is that economic growth, emissions reductions, and workforce inclusion are mutually reinforcing. Strong policy and financing create market demand; demand enables employers to invest in training and retention; and a skilled, inclusive workforce is essential to deliver decarbonization at scale. When these elements are misaligned, progress stalls despite strong market interest and technological readiness. Coordinated action across governments, industry, labour, and training systems is therefore critical to realizing the full climate, economic, and social benefits of Canada's green building transition.

Why It Matters

This project demonstrates that Canada's green building sector is not a niche climate solution, but a foundational economic and workforce system shaping the country's ability to meet climate targets, address housing shortages, and sustain inclusive growth. The findings matter for policymakers, industry leaders, utilities, training institutions, and workforce organizations because they show that economic, climate, and labour outcomes are driven less by technological readiness than by the design and coordination of policies, funding mechanisms, and workforce systems. Decisions made now will determine whether Canada captures the full economic and employment benefits of building decarbonization—or continues to fall short of both climate and housing goals.

State of Skills: Sustainable Jobs for Economic Growth

For current practice, the findings challenge prevailing approaches to workforce development and retrofit delivery. Many existing programs treat training, financing, and decarbonization as separate policy domains. This research shows they are inseparable. Contractors, particularly small and medium-sized firms that deliver most retrofit and residential construction work, cannot invest in training without predictable project pipelines. Likewise, workers cannot commit to upskilling or remain in the sector when employment is volatile. The evidence suggests that embedding paid training, mentorship, and workforce requirements directly into publicly funded retrofit and construction projects is more effective than stand-alone training initiatives. This has immediate implications for how governments design retrofit incentives, procurement criteria, and capital programs, as well as how training providers structure delivery models.

At the system level, the research shows that stop-start incentive programs, short funding cycles, and misaligned municipal-provincial-federal timelines undermine both decarbonization and workforce development. Stabilizing retrofit pipelines through multi-year funding commitments, harmonized building codes, and aligned permitting and grid upgrade schedules is both a climate and workforce strategy. These insights are relevant to ministries responsible for housing, infrastructure, labour, immigration, skills training, and economic development, as well as to public finance institutions and utilities whose investment timelines shape project feasibility.

Green-related skills and knowledge are growing in significance and are becoming widespread across many sectors and occupations, requiring more workers to upskill by building upon their existing competencies.

Read Thematic Report

The project also contributes critical evidence to discussions about labour and skills shortages in the context of Canada's low-carbon transition. Decarbonization pathways significantly increase demand for integrated mechanical, electrical, digital, and commissioning skills, while existing training and apprenticeship systems are not structured to meet this demand. The findings show that recruitment alone will not close labour gaps. Retention, mid-career upskilling, and reform of apprenticeship and Employment Insurance structures are essential to maintaining a sufficient supply of skilled tradespeople. These insights extend beyond green buildings and are relevant to other sectors undergoing decarbonization, including energy, transportation, and industrial manufacturing.

The research also has important implications for equity and inclusion in Canada's labour market. Expanding participation and retention of underrepresented groups—women, Indigenous peoples, racialized communities, newcomers, youth, and 2SLGBTQ+ workers—is a labour market necessity. The findings show that workplace culture, supervision, mentorship, and advancement pathways are decisive factors in whether workers remain in the trades. Policies that embed inclusion and mentorship requirements into procurement, financing, and ESG frameworks can improve retention and reduce chronic skills shortages. These lessons are applicable across sectors facing demographic pressures and workforce attrition.

More broadly, the project situates green buildings within Canada's housing crisis and low-carbon economic transition. Residential retrofits and net-zero new construction are essential to meeting climate targets, improving affordability through lower operating costs, and increasing housing supply. However, without coordinated workforce and financing strategies, these goals will remain out of reach. The research reinforces that climate policy, housing policy, and skills policy must be aligned to deliver results at scale.

What's Next

Building on the findings of this project, the Canada Green Building Council plans to maintain ongoing engagement with sector stakeholders and ensure that the insights generated remain current and actionable. A key next step is the annual updating of the datasets and economic modelling used in this report, allowing CAGBC to track changes in green building employment, GDP contribution, and workforce needs over time. These updates will support evidence-based decision-making as policies, market conditions, and decarbonization pathways continue to evolve.

CAGBC also intends to activate the findings through targeted knowledge mobilization. This includes convening panel discussions and roundtables to foster dialogue across governments, industry, labour, training providers, utilities, and investors. These forums will be used to deepen understanding of the scenario analysis, workforce implications, and recommendations, while encouraging cross-sector coordination. Particular emphasis will be placed on engaging investors and financing institutions, with the goal of aligning capital flows more closely with workforce development, training, and retention needs in the green building sector.

Have questions about our work? Do you need access to a report in English or French? Please contact communications@fsc-ccf.ca.

How to Cite This Report
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