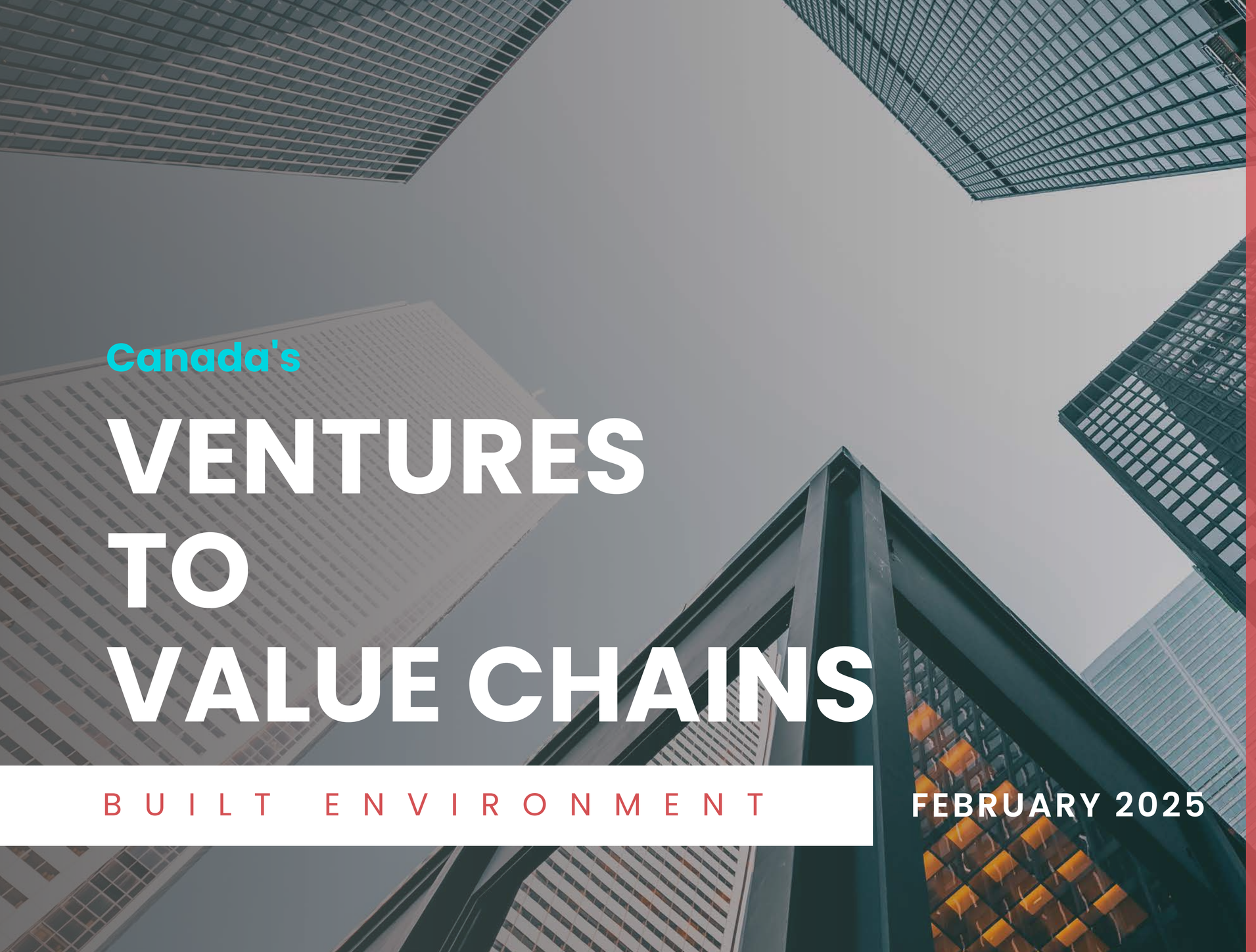

Canada's

VENTURES TO VALUE CHAINS

BUILT ENVIRONMENT

FEBRUARY 2025

FORESIGHT
CANADA

ACKNOWLEDGEMENTS

Foresight acknowledges that the lands on which we conducted this work are the traditional, ancestral, and unceded territories of the xwməθkwəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations.

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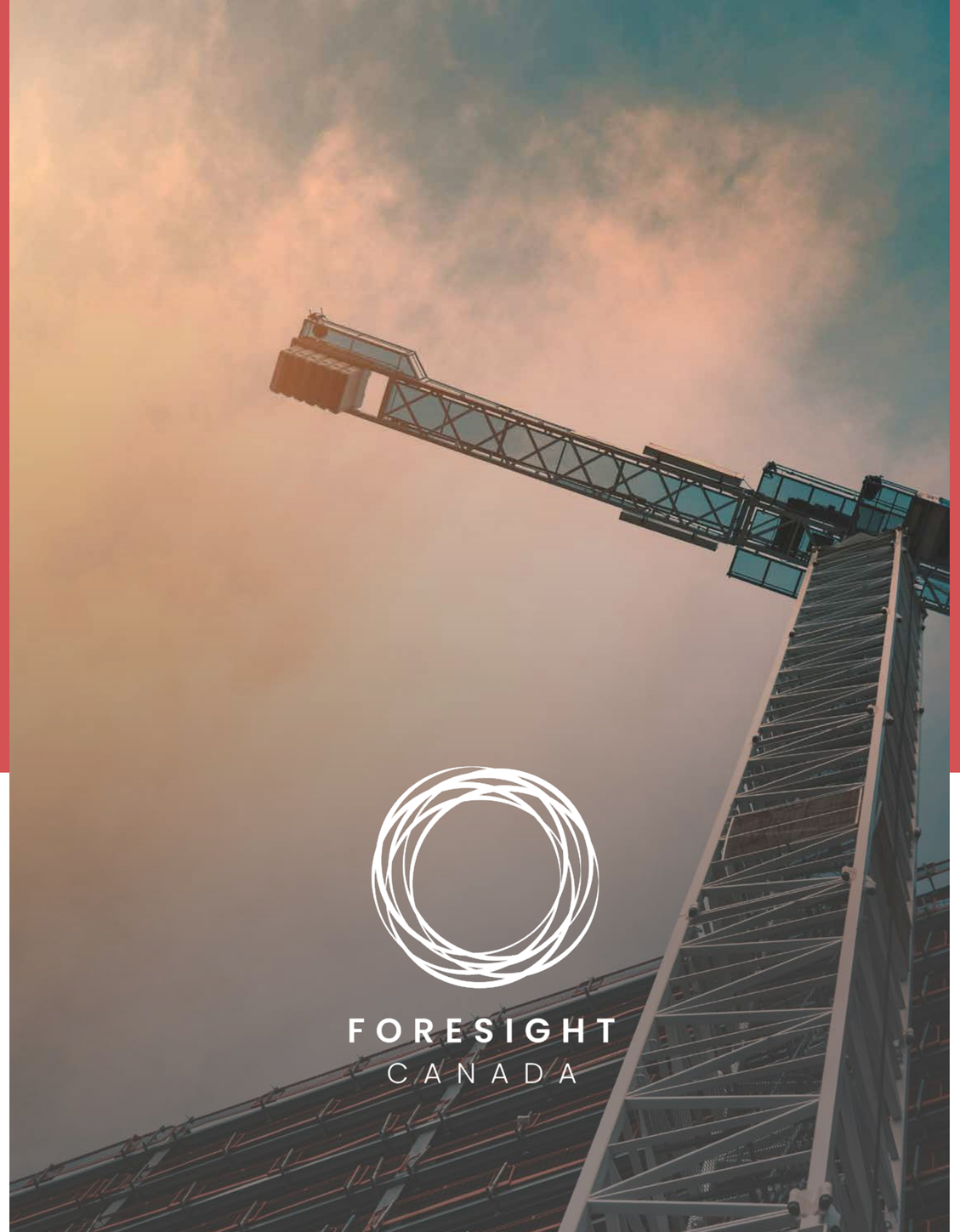
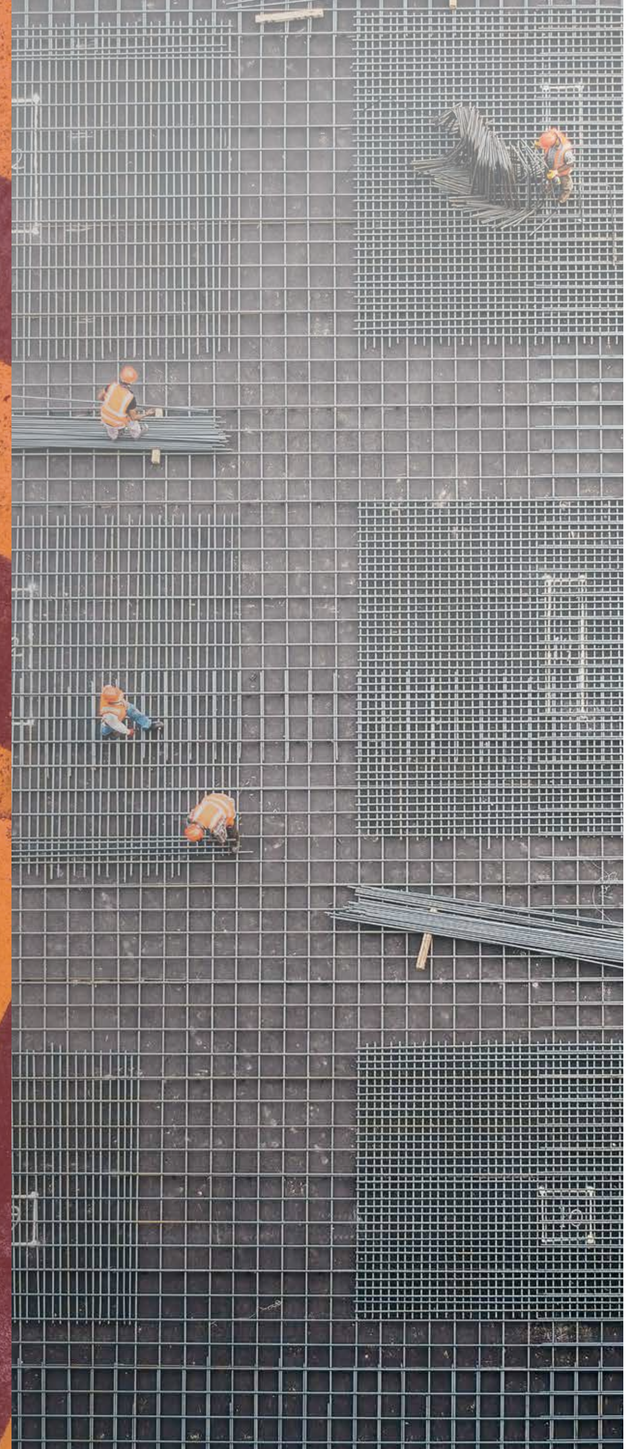
We'd like to acknowledge and thank the contributions of Net Zero Insights, in compiling the built environment technology ecosystem data.

Foresight is Canada's cleantech accelerator.



Foresight is Canada's cleantech accelerator. We bring together innovators, industry, investors, government, and academia to address today’s most urgent climate issues and support a global transition to a green economy.

ABOUT



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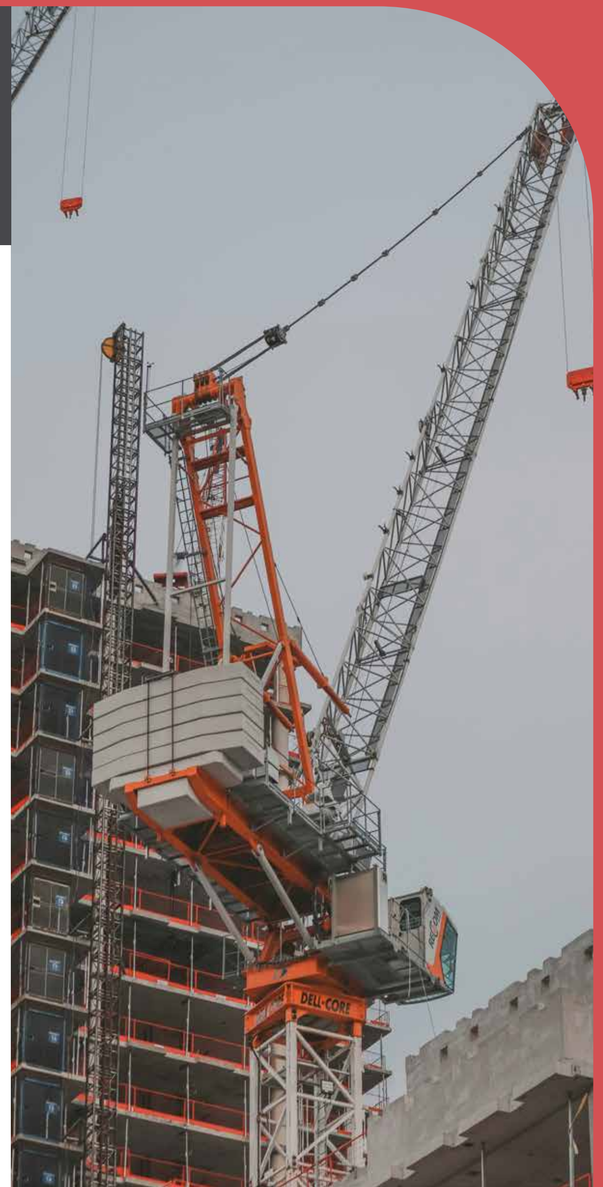
Most buildings standing today will continue to be in service in 2050. That means Canada needs to retrofit nearly every building currently in use to reach its climate commitments.

- "Reaching Net-Zero in Existing Buildings." 2023. Efficiency Canada. July 17, 2023.

INTRODUCTION

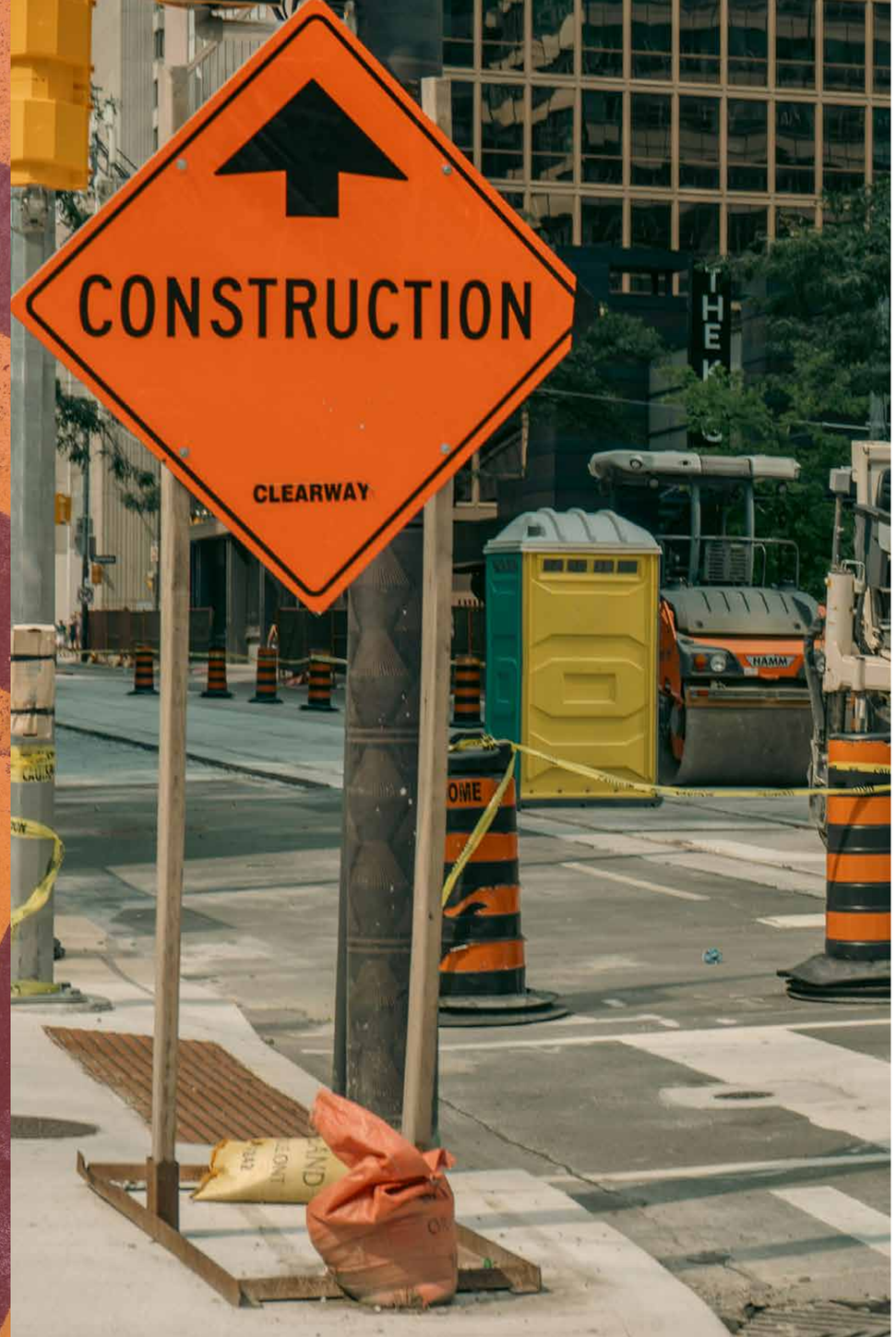
DECARBONIZING CANADA'S BUILT ENVIRONMENT, A SECTOR RESPONSIBLE FOR AROUND 13 PER CENT OF THE COUNTRY'S TOTAL GREENHOUSE GAS EMISSIONS IN 2023 (18 PER CENT WHEN FACTORING IN ELECTRICITY-BASED EMISSIONS), SIMULTANEOUSLY POSES SIGNIFICANT CHALLENGES AND TRANSFORMATIVE OPPORTUNITIES. [1]



While Canada's construction sector generates one-third of total solid waste in Canada (i.e., more than four million tonnes of waste per year), construction is also one of the most significant economic sectors, generating $141 billion in GDP in 2020. [2,3] Simultaneously, it is the third-highest carbon-emitting economic sector, and innovative technologies to support emissions reduction need to be applied throughout the value chain for both economic and environmental longevity. [4] With municipal, provincial, and federal climate goals rapidly approaching—and built environment projects requiring long timelines—there is an urgent need to invest in the research, development, and commercialization of clean technologies in this sector now. Bolstered by growing demand, networks, funders, and accelerators, the number of companies working to deploy clean technologies across the built environment value chain continues to grow. Specifically, the provinces of British Columbia, Quebec, and Ontario have seen growing innovation in this sector, and have been labelled as hubs for circular built environment initiatives. [5]

The term built environment refers to “The human-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure, such as water supply or energy networks”. [6] The Government of Canada defines clean technology as “Any good or service designed with the primary purpose of contributing to remediating or preventing any type of environmental damage”. [7,8]

Nationally, government research and grant programs have been piloted and launched to embed more climate action into the built environment sector. These programs target areas like the design stage of producing construction materials, the digitization of the construction process, and the integration of lower-emitting HVAC systems through subsidized retrofits. [9–11] Citing the imperativeness of prioritizing circularity in the creation of both materials and whole structures, experts have also recommended increased cross-sectoral collaboration between building suppliers and engineers or architects. This would strengthen shared responsibility of material use and enhance certification programs (i.e., government-regulated or LEED) to further incentivize durability and



sustainable deconstruction.[5] On a federal level, the 2021-2028 Climate Resilient Built Environment Initiative (CRBE) funded by Infrastructure Canada and expanded under the National Adaptation Strategy is also undertaking research in multiple themes at the intersection of construction and climate change, such as nature-based solutions for urban heat islands, climate resilience in major public infrastructure assets, and science-based knowledge that can help inform standards.[12]

In recent years, the Canadian building industry has adopted life cycle assessment (LCA), which is an internationally-recognized methodology that assesses the environmental impacts of a product considering its entire value chain and every stage of creation, usage, and disposal. This has also led to the development and deployment of multiple technologies focusing on estimating greenhouse gas emissions in building materials, LCA tools, and other tech enabling more efficient controls and energy management.

Mapping technology innovators in the built environment sector helps shape strategy by highlighting where Canadian companies are driving progress and seizing growth opportunities. This edition of Foresight's Ventures to Value Chains (V2VC) initiative aims to provide insights to our Helix-5™ partners on areas of strength for Canada, as well as opportunities for growth, by leveraging data we have collected on Canada's built environment technology companies.

With this report, Foresight aims to add to this existing body of knowledge by focusing on the current ecosystem of built environment technology innovation, research, and development. These insights are based on a dataset of 201 companies across Canada, each assigned to relevant steps along the sectoral value chain (VC steps). The report identifies regional and topical clusters of companies and potential innovation trends, while also referencing the existing body of work in the built environment sector to provide additional context. It follows common infrastructure life cycle patterns, excluding the harvesting and extraction of raw materials for construction materials, as these processes are covered in existing value chains.

Although these findings reflect only a snapshot of the current technology ecosystem, this installment of Foresight's V2VC initiative aims to contribute to the evolving dialogue on innovation in the built environment and provide insights on possible areas where Canada can build on its strengths, as well as potential opportunities for growth.

RATIONALE

VENTURES TO VALUE CHAINS

Ventures to Value Chains (V2VC) is a Foresight initiative that leverages data from technology companies and other key collaborators to map and categorize strategically important industry value chains for Canada in the clean economy.

This initiative will result in a report and web map, which can be used as tools to inform key industry leaders of Canada's competitive strengths, ecosystem gaps, and areas of opportunity and growth. These insights can assist in identifying where targeted programming, research and development, or funding will bolster Canada's leadership and economic development as we transition to a net zero economy.

BUILT ENVIRONMENT TECHNOLOGY: THE VALUE CHAIN

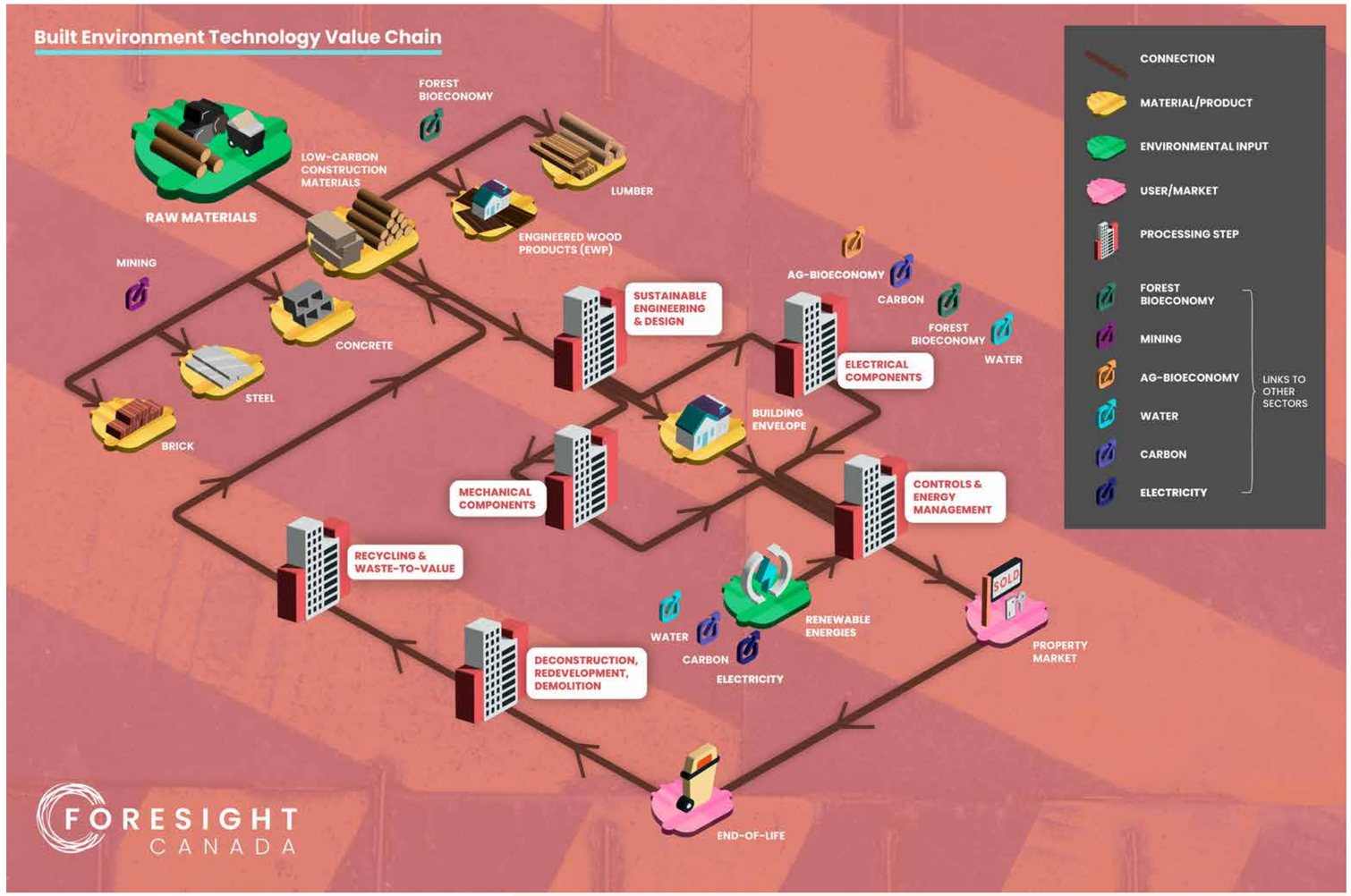


Figure 1 Built Environment Technology Value Chain

Figure 1 identifies steps in the built environment technology value chain, from the harvest and extraction of natural resources for construction materials to end of life, by outlining a series of processing steps [1], and inputs and outputs along the value chain. The value chain steps mapped in the dataset cover the built environment value chain from midstream to end of life.

- **Midstream:** materials production and component manufacturing (engineered wood products (EWP), lumber, concrete, steel, brick)
- **Downstream:** the sustainable engineering and design of electrical, mechanical, and building envelope components, and construction of projects
- **Operations and end use:** controls and energy management
- **End of life:** deconstruction, demolition, redevelopment, and recycling

This value chain is intended to represent the cyclical lifecycle aligned with sustainable engineering, design, and construction processes.

Because this value chain intersects with other sectors, it also identifies areas where there are overlaps with other sectoral value chains that Foresight is mapping. For this reason, upstream processes (extraction, harvesting, and initial raw material processing) are not covered in this value chain and are instead covered in the mining and forest bioeconomy V2VC reports. [13]

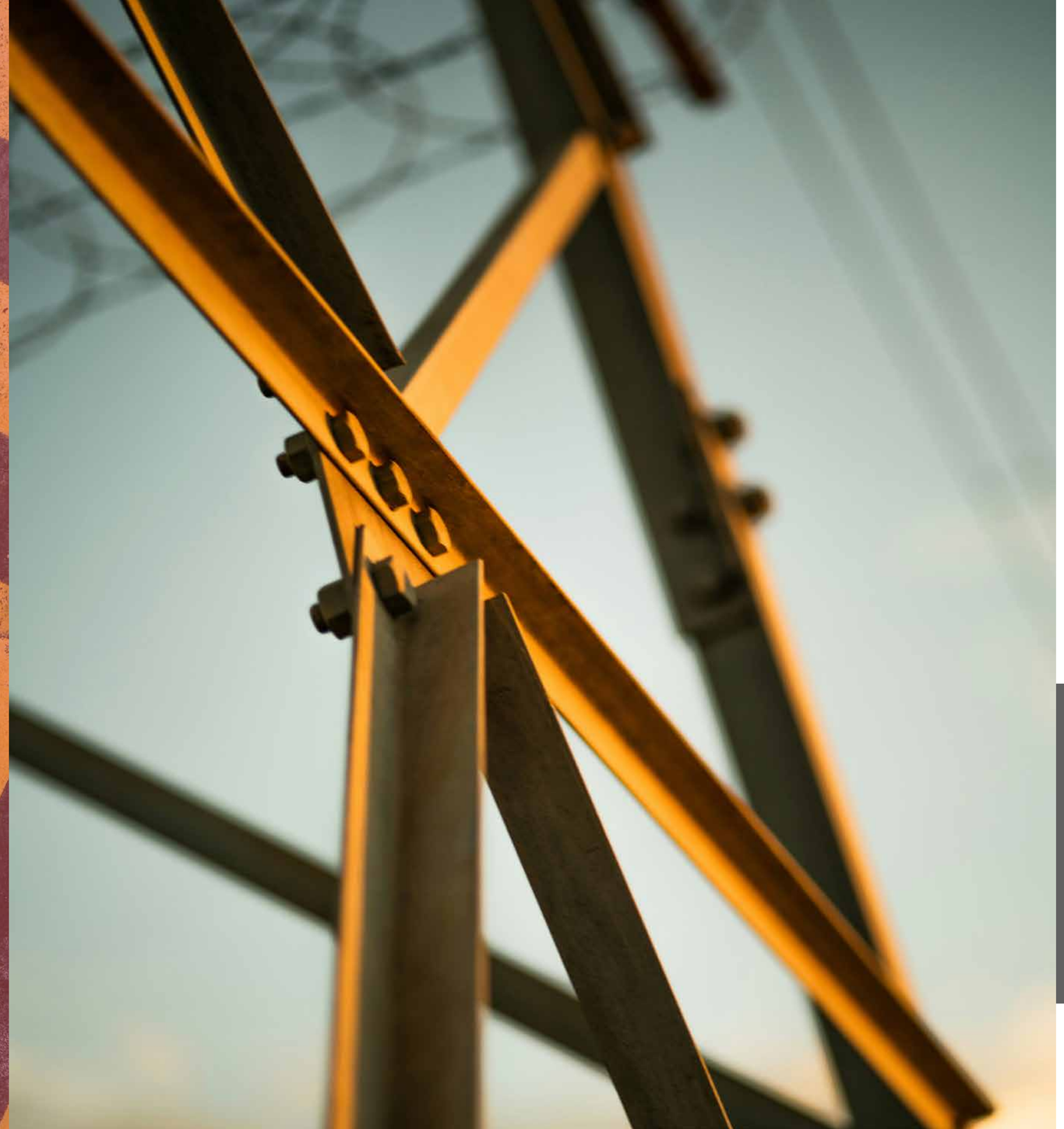
[1] While these are labelled as processing steps, they include all types of actions within the value chain. For definitions of each of the processing steps, see Appendix A.

METHODOLOGY

This research was conducted by mapping the ecosystem of built environment technologies, categorizing companies based on value chain steps, and analyzing how the companies were distributed across the value chain.

The built environment database comprises technology companies, enablers, and knowledge generators. The value chain mapping and analysis focused on the technology companies, while the enablers and knowledge generators were used to provide additional context. Companies are included in the dataset based on the following criteria:

- They are involved in tech innovation, research, or development in some capacity. Suppliers, distributors, service providers, consulting or law firms, among others, are excluded based on these criteria unless they also have their own technology.
- They are headquartered in Canada or have a strong Canadian presence in built environment technology innovation, research, and development. Examples of a strong presence would include companies with a dedicated research and development branch located in Canada or a Canadian subsidiary with its own technology that has retained its brand identity.
- Have a valid website or online presence.



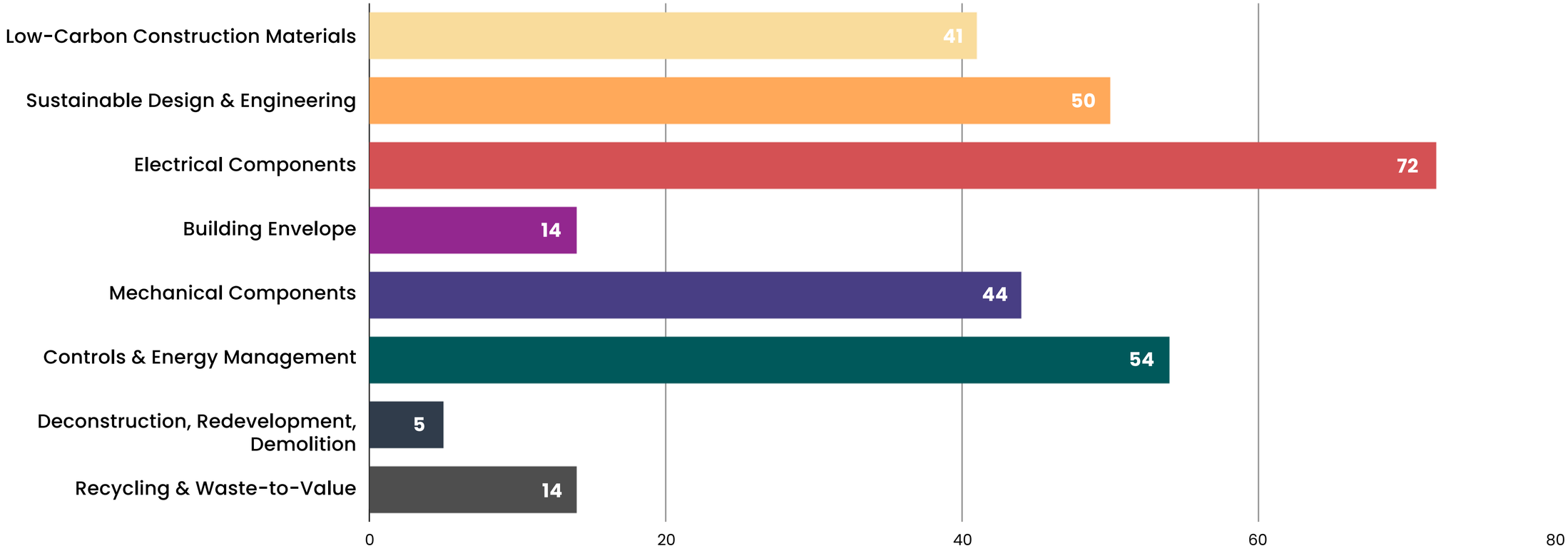
One mass timber sourcing, design, and installation facility with notable operations in Canada is included in the dataset, even though the technologies and intellectual property applied are not Canadian. They are identified with a keyword so they can be discussed separately. These are included because manufacturing capacity and mass timber is central to this value chain and understanding potential clusters, areas of strength, and opportunities.

Companies were assigned to up to two VC steps based on their innovation focus, then analyzed in an aggregated manner to identify both regional and national clusters and potential trends. Keywords and comments were used to provide additional context to the potential trends. Secondary research was used to identify possible external factors (e.g., policy, natural resource availability, adjacent industries) that could contribute to clusters or trends. Because the data can only indicate clustering and concentrations, and not why trends exist, observations are communicated as:

- **Areas of strength:** Areas where the data and supporting research suggests that the agri-tech sector is doing well and should continue to maintain.

- **Opportunities:** Areas where the data and/or supporting research suggests that there is an opportunity for growth to help meet the need for agricultural innovation and climate solutions.

CANADA'S BUILT ENVIRONMENT TECH COMPANIES



201 COMPANIES ARE ASSIGNED TO THE BUILT ENVIRONMENT VALUE CHAIN.

- The top two VC steps with the highest number of companies assigned are in the downstream and operations stage of the value chain: electrical components **(72)** and controls & energy management **(55)**.
- The VC steps encompassing infrastructure end of life are the least represented, including deconstruction, redevelopment, and demolition **(5)**, and recycling & waste-to-value **(14)**.
- **14** companies have a focus on the building envelope.
- The midstream of the value chain represents around one-third of the mapped steps: low-carbon construction materials **(41)**, and sustainable design and engineering **(50)**.

Figure 2

Distribution of Built Environment Technology Companies Across the Value Chain

PROVINCIAL AND REGIONAL CLUSTERS

THIS SECTION EXPLORES HOW COMPANIES ARE DISTRIBUTED GEOGRAPHICALLY AND CONSIDERS KEY CLUSTERS BOTH PROVINCIALLY AND REGIONALLY.

Understanding where technology companies are clustered provincially and regionally can provide insights into **how provinces can play to their existing strengths and build on potential growth opportunities.** This is especially true when clusters include co-located university industrial assets, research centers, and government agencies that can enable collaboration, knowledge transfer, and technical advancements.

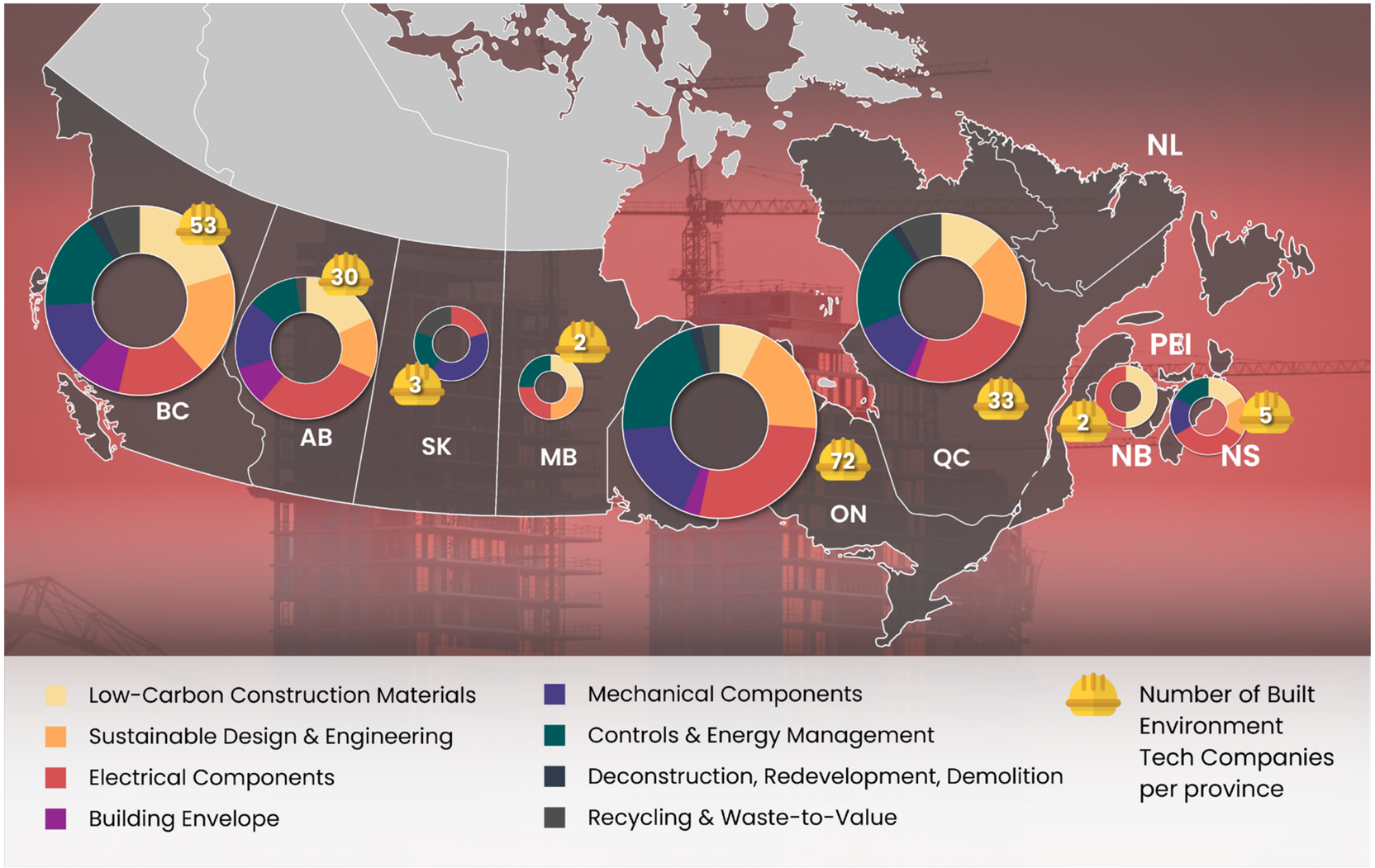


Figure 3 Provincial Value Chains

SUMMARY

- Ontario **(72)**, British Columbia **(53)**, and Quebec **(33)** are the most represented provinces.
- When measuring density of companies relative to population, British Columbia has the most companies per one million residents **(1.76)**, followed by Alberta **(1.18)**.
- The value chain distributions in British Columbia and Quebec are the closest to the national distribution.
- British Columbia is strongest in low-carbon construction materials production and building envelope.
- Ontario has the most companies in electrical components, sustainable design and engineering, mechanical components, and controls & energy management.
- Nova Scotia is the most represented Atlantic province.
- 47% of the companies are located in Canada's three largest census metropolitan areas (CMAs): Vancouver **(42)**, Toronto **(36)**, and Montreal **(17)**.
- The VC step of electrical components is the most well-represented across Canada.

BRITISH COLUMBIA

Sustainable construction materials, alongside sustainable design and engineering, are areas of strength for British Columbia. With **53** companies total, British Columbia is the second most-represented nominally (after Ontario). **Overall, companies related to low-carbon construction materials are clustered within British Columbia.** This aligns with the province's forestry and mining resources contributing to the manufacturing of construction materials.

KEY VC STEP OBSERVATIONS

- The most represented VC steps in British Columbia are low-carbon construction materials **(16)**, and sustainable design and engineering **(14)**.
- British Columbia has areas of strength at the beginning and end of the value chain, with the highest number of companies in low-carbon construction materials **(16)**, and recycling & waste-to-value companies **(5)**.
- Proportionate to population, British Columbia has the highest concentration of companies.

REGIONAL CONSIDERATIONS

- **Vancouver: 44** out of **53** built environment tech companies in British Columbia are located in the Vancouver CMA, making it the most represented region in the province, with around 80 per cent of total companies mapped in this area. The large population density and presence of academic institutions and industry associations are likely key contributors to this cluster.
- **The forest bioeconomy and mining sectors:** With a resource-centric economy rooted in the province's geographical competitive advantages, British Columbia has long been rich in natural resources, lending the opportunity to soundly develop technologies for these sectors that empower regenerative practices and circular economies. Significant areas of opportunity for tech advancement are tied to areas including engineered wood products (EWP) and the battery metals supply chain, which are both heavily relevant to green infrastructure projects through electronic and mechanical components, construction materials, and smart technology devices.

BRITISH COLUMBIA

DISCUSSION

Captured in the CleanBC Roadmap to 2030, British Columbia has a set goal to reduce emissions in buildings and communities by more than half by 2030. [14] This goal includes multiple sub-targets aimed at limiting pollution and emissions, such as ensuring all new builds within the province are zero-carbon and all new space and hot water equipment achieves at least 100 per cent efficiency.

In addition to federal grant and loan options, the Government of British Columbia also offers the CleanBC Better Homes Energy Savings Program, which provides rebates of up to $10,000 for homes primarily powered by electricity that perform upgrades related to windows and doors, insulation, heat pumps, and heat pump water heaters. [15]

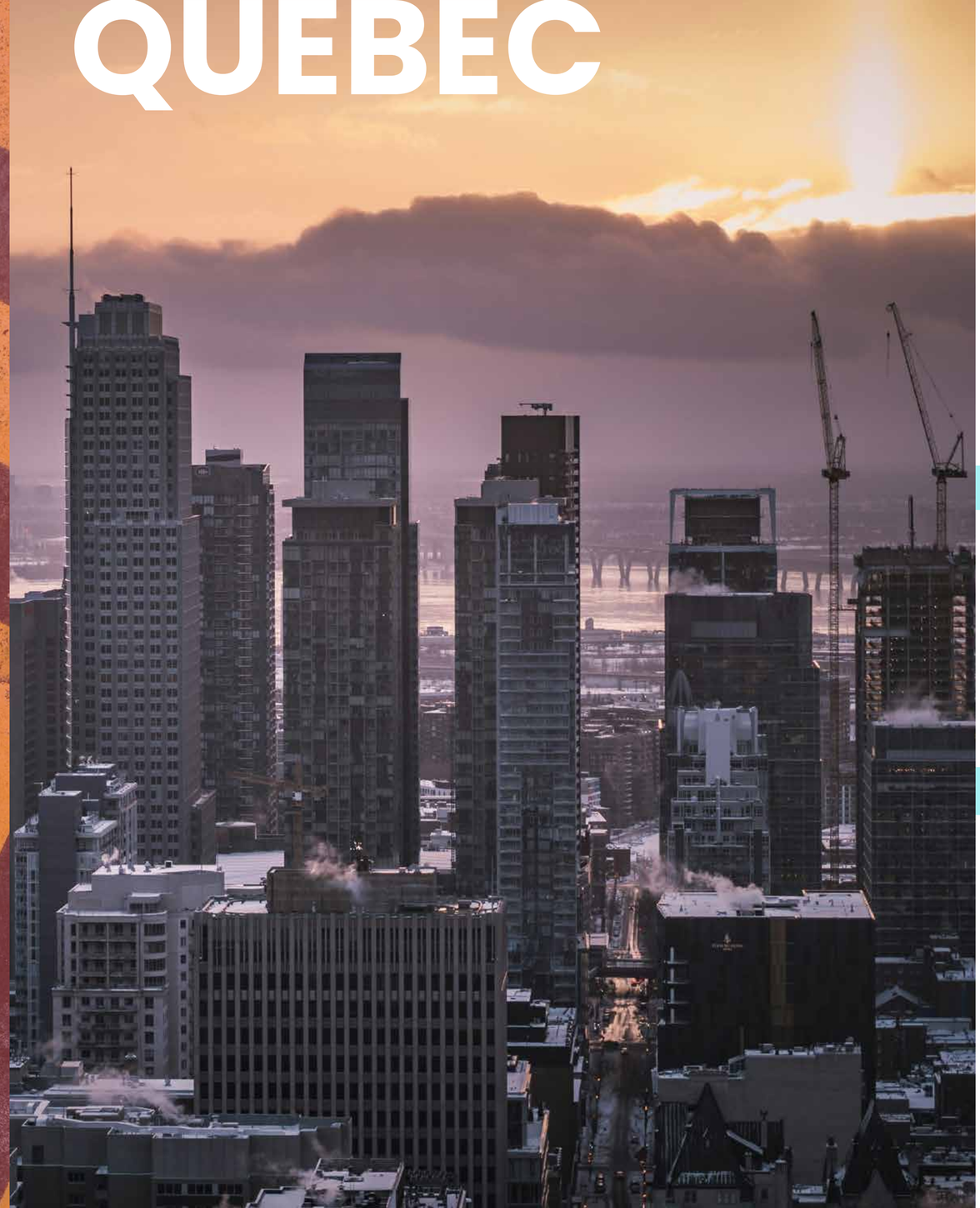
In 2017, the BC Step Code was introduced, which consisted of a series of increasingly stringent energy performance requirements for new construction. It gradually updates the BC Building Code and focuses on quantifiable outcomes like airtightness, energy use intensity (EUI), and mechanical system efficiency. The ultimate goal is to achieve net zero, energy-ready buildings by 2032. As of May 1, 2023, the BC Building Code required a 20 per cent improvement in energy efficiency for most new buildings in the province. [16] Naturally, this has accelerated the adoption of high-performance building practices like energy modeling and advanced air sealing techniques, and driven demand for products like heat pumps, advanced insulation, and smart building controls.

Faced with a growing number of wildfires (especially during the summer months), places like British Columbia must increasingly integrate fire resilience considerations into infrastructure projects. [17] Several low-carbon construction material companies already demonstrate expertise in mass timber, which inherently provides better fire performance due to its charring properties that slow combustion and retain strength. In the event of a fire, this would allow more time for evacuation. [18] The BC FireSmart Home Development Guide highlights the selection of construction materials and the strategic placement of features like vents, dormers or porches as protective measures. The built environment sector lends a unique opportunity for British Columbia to excel in building provincial resilience. In December 2023, the province also adopted the BC Building and Fire Codes 2024, emphasizing resilience to climate-related hazards like wildfires and promoting fire-resistant materials and construction practices. [19] In addition to the fire-resistant properties of mass timber, several companies are actively innovating in fire-resilient technologies. For example, Kalesnikoff offers fire-resistant glulam beams and columns, while Nexii develops prefabricated construction materials with high fire resistance, supporting the rebuild efforts in Lytton. [20]

Vancouver has a strong ecosystem of educational institutions; for example, the BC Institute of Technology (BCIT)'s School of Construction and the Environment embeds circular construction principles into programs, with their Centre for Ecocities focusing on embodied carbon and consumption-based GHG emissions. The Wood Innovation Research Laboratory (WIRL) at the University of North British Columbia (UNBC) also features a trailblazing wood science and engineering research facility that can build and test large-scale integrated wood structures using various types of EWP. The University of British Columbia (UBC)'s Faculty of Forestry also features a Sustainable Built Environment Lab dedicated to advancing sustainable construction research through Building Information Modelling (BIM), life cycle assessment (LCA), zero-carbon building solutions and EWP. [21] Additionally, enablers like the Zero Emissions Innovation Centre have greatly contributed to the built environment carbon emissions measurement space, providing valuable insights into emissions hotspots in the value chain.

With knowledge generators, accelerators, hubs, and think tanks also clustered in British Columbia, it would be fruitful to continue pushing for their innovation and support outside of large urban areas and in more remote or interior regions. These areas are rich in natural resources with jobs and economies that form the beginning of the built environment's value chain.

QUEBEC



Electrical components are a key strength for Quebec. With a total of **33** companies, Quebec is the third most-represented province, following Ontario and British Columbia.
The Quebec companies represented are primarily focused on renewables, with a notable emphasis on solar power. Whether in heating applications, at-home EV charging, or energy management solutions, the province has a relatively high number of mature clean energy companies at the commercial stage.

KEY VC STEP OBSERVATIONS

- The most represented VC steps in Quebec are electrical components **(12)**, and controls & energy management **(10)**.
- Quebec has areas of strength at the middle and end of the value chain, with the second highest number of electrical components **(12)** companies, and highest number of recycling & waste-to-value companies **(4)**.

REGIONAL CONSIDERATIONS

- **Montreal:** With **17** companies, the Montreal CMA is the most represented region in Quebec, accounting for about half of the total companies mapped in the province. The large population density and presence of academic institutions and industry associations are likely key contributors to this cluster.
- **Construction in Quebec:** With $66B of investments in 2023 and approximately 314,200 direct jobs generated per month (i.e., 1 in 15), construction remains a key industry in the province. 79 per cent of these companies have five or fewer employees. [22]

QUEBEC

DISCUSSION

As Canada's largest producer of hydroelectricity, 93 per cent of Quebec's electricity is produced by hydroelectric facilities. [23] However, Quebec is the province with the fourth highest potential to produce solar energy, and receives more solar irradiation than other provinces and territories, aside from the Prairies (Alberta, Saskatchewan, and Manitoba). [24] The average solar mechanism in Quebec can produce 1183 kWh of electricity per kW of solar panels per year. [25] Therefore, the strong representation of solar tech companies in the province can be attributed to a growing recognition of the landscape's natural competitive advantages and innovation in other streams of renewable energy. The provincial government is also driving demand for these solar technologies through financial incentives. The Chauffez Vert program offers grants for replacing an oil or propane central heating system in residential buildings with a system powered by an eligible renewable energy which includes solar. 26 Hydro-Québec also features a net metering program that allows households to generate electricity from a renewable source while remaining connected to Hydro-Québec's grid. If more electricity is generated by the solar panels than is used, credits will be given to offset electricity bills. [27]

Quebec has been credited as a leader in the push for more mass timber construction, as well as the end-phase of infrastructure. In addition to the few companies focused on sustainable construction materials and processes, La Charte du Bois du Québec, administered by the Ministère des Forêts, de la Faune et des Parcs, aims to increase wood use in the building sector and reduce its associated greenhouse gas emissions. It also seeks to incentivize the development of high-value-added wood products."

When it comes to using LCAs to determine emissions hotspots in the built environment sector, Quebec has seen the launch of new technologies such as Gestimat—a tool that empowers the comparison of different scenarios modelled in a Quebec context during the preliminary design phase by estimating GHG emissions associated with the manufacture of structural materials. [28] Outside of the province, provincial ministries and municipalities can use tools like Gestimat to share carbon accounting data with the Ministry of Forests, Wildlife and Parks of Quebec (MFFP). This encouragement of cross-provincial knowledge-sharing and collaboration could play a key role in addressing benchmarking gaps and fragmentation across jurisdictions.

Quebec also boasts a significant portion of the province's recycling and waste-to-value companies. Similar to the collaboration efforts seen in the LCA realm, resources are pooled in waste management. The Regroupement des Récupérateurs et des Recycleurs de Matériaux de Construction et de Démolition du Québec (3RMCDQ) is an association of companies and core actors across the province that advocate for product recovery, recycling, reuse, and reclamation—sharing collection, transport, and other processes. [29] Additionally, Valoris, a municipal public body, receives and processes organic residual materials (in partnership with Englobe), as well as residential, Industrial, Commercial, and Institutional (ICI) waste, recycling, and residues. [30] Representing 14 municipalities and the City of Sherbrooke, and serving almost 200,000 residents, the Quebec Ministry of Economy and Innovation, the Centre of Excellence for the Valorization of Residual Materials, and the Centre of Excellence in Clean Technologies all directly engage with Valoris through funding, technology transfer, and R&D efforts to ensure the longevity and advancement of their work.

The Government of Quebec is also supporting the digital transition of its construction industry through a $3.6M investment into IQC 4.0 (Quebec Initiative for Construction 4.0), an ongoing initiative developed in 2018 in collaboration with the Quebec Ministry of Economy and Innovation (MEI), local construction associations (Quebec BIM Group, CEGQ), and the Digital Governance Institute (CEGQ). [31] Businesses can participate in the initiative for free by following a personalized action plan designed to initiate or continue tech integration, driving the digital transformation of the construction industry. This will help reduce operating costs, minimize waste, and increase process efficiency.

ONTARIO

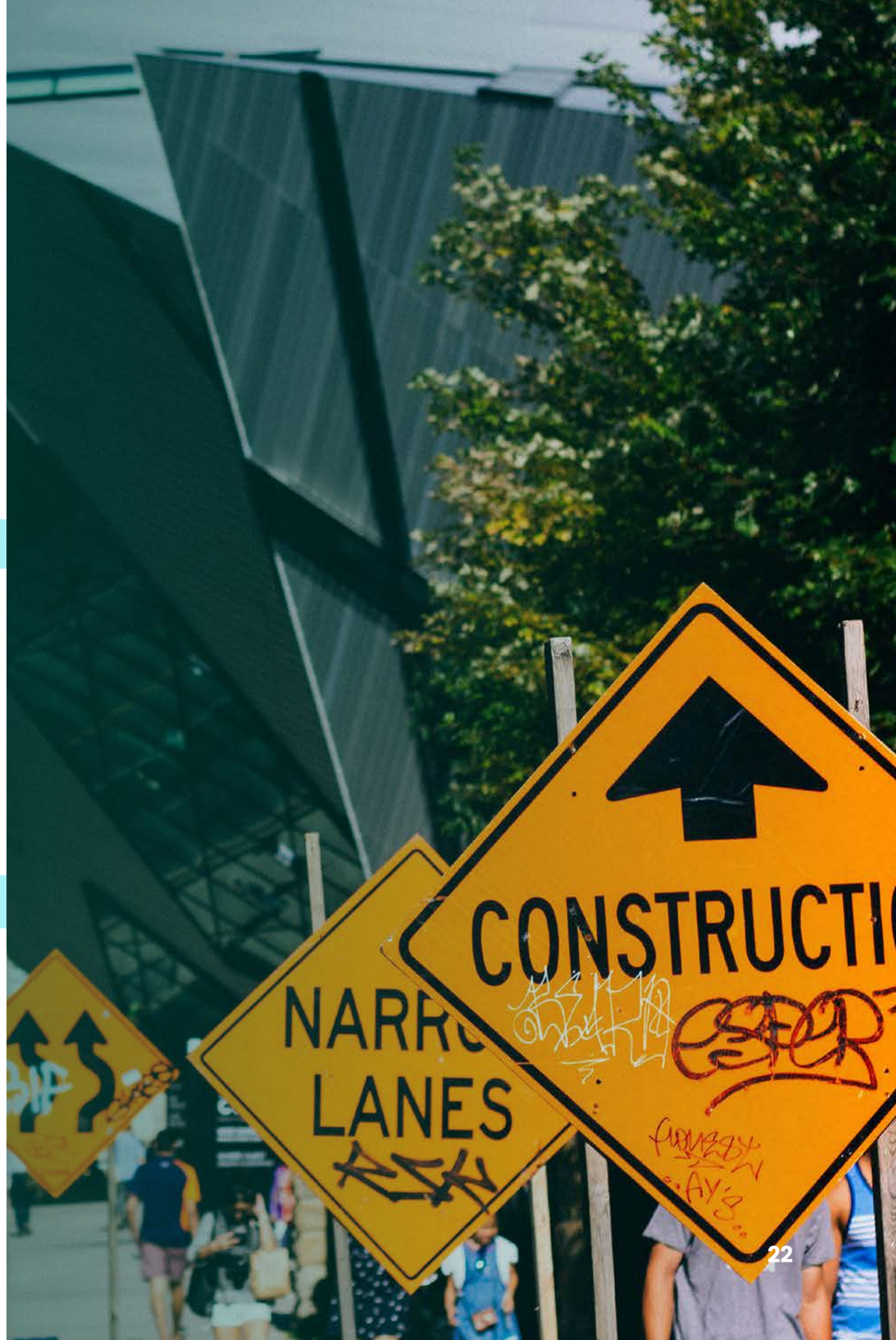
Ontario has the highest total number of companies in the dataset (72), but features relatively low numbers for many of the value chain steps when compared to the population of provinces represented. Companies with a focus on technology that generates and stores renewable energy and increases energy efficiency are featured most prominently. Additionally, **Ontario has been described as having a diverse cleantech landscape "with strengths in energy storage, water technologies, renewable energy, nuclear power generation, hydrogen, greener buildings, industrial biotechnology, smart grids, waste recovery, and environmental engineering services."** [32]

KEY VC STEP OBSERVATIONS

- Ontario has areas of strength at the middle of the value chain, with the highest total number of companies in electrical components **(30)**, controls & energy management **(24)**, sustainable engineering & design **(19)**, and mechanical components **(18)**.
- However, when measuring the number of companies against the province's population, Ontario has low or below-average numbers in the low-carbon construction materials; building envelope; deconstruction, redevelopment, and demolition; and recycling & waste-to-value VC steps.

REGIONAL CONSIDERATIONS

- **The Greater Toronto Area (GTA):** Comprising 6 local boroughs plus the cities of Mississauga and Brampton, the GTA is home to **37** companies, including **26** within the City of Toronto alone. This means that around half of built environment tech companies in Ontario are in the GTA, while a little over one-third are headquartered or operate primarily in Toronto.
- **Export favourability:** Besides the province's access to forest bioeconomy products, Ontario's proximity to the United State's eastern region may position their mass timber market for growth and export.



ONTARIO

DISCUSSION

Ontario is Canada's most populous province and an economic powerhouse. Playing a significant role in advancing cleantech solutions within the built environment, the province plans to spend over $190B in key infrastructure projects over the next decade. [33] With strengths in technologies that enhance energy efficiency through remote or AI monitoring and other building operation integrations, the adoption of digital Building Information Modelling (BIM) has been gaining momentum across public infrastructure projects. To encourage improvements in construction efficiency and cost reduction, the provincial government has started testing the application— and benefits of "digital twins"— digital modelling technology—through a $5M investment. [34]

The Toronto Green Standard (TGS), established in 2006, supports Toronto's climate action goals under the TransformTO initiative through a tiered set of increasingly ambitious sustainable site and building design guidelines. These guidelines encompass energy efficiency, water management, air quality, waste diversion, and urban biodiversity. [35] The latest version of standards is projected to contribute to savings of over 1 $MTCO_2e$ cumulative greenhouse gas emissions by 2050. [36] By aligning with Toronto's 2050 net zero goals and providing a clear regulatory roadmap, the TGS supports the built environment sector's growth by enabling developers to plan for future climate requirements and transition smoothly to higher compliance tiers.

In November 2024, Ontario developers filed a legal challenge against the City of Toronto, arguing that the City oversteps their authority by trying to enforce green standards on construction. [37] The Residential Construction Council of Ontario asked the provincial court to prohibit the City from imposing any construction standards outside of the Ontario Building Code. The ability to prioritize addressing the housing shortage without unnecessary complications was cited as a key argument, especially in light of Premier Doug Ford's pledge to build 1.5M homes by 2031. However, in 2020, Ontario's Auditor General found that many ministries "Do not … effectively oversee, evaluate and improve the performance of programs to support and encourage reducing energy use in buildings." [37] This led to 30 municipalities, including Toronto, implementing city-specific rules for climate-resilient construction beyond the existing building code.

Ontario is also a provincial leader in stormwater management technologies. Many efforts using low-impact development principles have been led at the local government level in Ontario, especially by the Conservation Authorities. [38] Methods like green roofs, permeable pavement, rainwater harvesting, and bioretention are all examples of low-impact development, and there are a number of companies in Ontario specifically Toronto) that innovate in these areas.

Targeting the end of the value chain, programs such as the Save on Energy initiative administered by the Independent Electricity System Operator (IESO) also offer incentives for businesses and property owners to retrofit buildings and implement energy-efficient technologies. [39]

Backed by the provincial government, the Ontario Mass Timber Program encourages wood usage in mid-rise and high-rise construction projects, providing funding and regulatory support to accelerate adoption. In early 2024, the province announced plans to amend the Ontario Building Code to allow encapsulated mass timber construction up to 18 storeys, an increase from the previous 12-storey limit. This change was finalized in January 2025. [40] Ontario has long been a leader in innovative low-carbon construction, as demonstrated by Bogdan Newman Caranci (BNC) Architects and Urban Design's 2019 design of Canada's tallest modern mass timber commercial building at the time. [41]

ALBERTA

There are **30** companies mapped in Alberta's built environment technology value chain, making it **the province with the fourth-most companies**. Traditionally, the province's economy has been rooted in extractive industries, namely oil and gas. However, when measuring the number of companies against the provinces' population, **Alberta frequently has around average or above-average numbers for multiple VC steps.**

KEY VC STEP OBSERVATIONS

- The most represented VC steps in Alberta are electrical components **(13)** and low-carbon construction materials **(8)**.
- Alberta has areas of strength at the beginning and middle of the value chain, with the third-highest total number of companies in low-carbon construction materials **(8)** and mechanical components **(7)**, and second-highest total number of companies in electrical components **(13)**.
- When measuring the number of companies against the provinces' population, Alberta is ranked second.

REGIONAL CONSIDERATIONS

- **Calgary:** There are **21** companies in Calgary, which makes it the most represented city in Alberta, accounting for about two-thirds of the total companies mapped in the province. This can reasonably be attributed to Calgary being the largest metro area within the three Prairie provinces and its high level of urbanization.
- **Incentivized retrofits:** In 2018, labour and material costs in home construction decreased due to Alberta issuing changes to its interpretation of the federal code, allowing wire-free switching in residential homes.[42] Companies could develop wireless switching that allowed for more affordable home automation of electronic functions. Additionally, a new retrofit program by the Pembina Institute and Alberta Ecotrust Retrofit Accelerator was announced in October 2024, allowing for further integration of smart electrical and energy-efficient technologies. The program highlights affordable solutions and provides energy coaching.[43]

ALBERTA

DISCUSSION

Alberta's areas of strength lie in the middle stages of the value chain, especially in electric components. This can likely be attributed to the large innovation opportunity in this area—their reliance on coal-fired generation means that their electricity sector produces more GHG emissions than any other province. [44] Additionally, the implementation of clean or sustainable electric components in Alberta is further stimulated through retrofit programs that provide financial incentives.

Alberta is progressing in sustainable construction materials and operations through the development of renewable materials and waste reduction strategies. Led by Alberta Innovates, the Sustainable Materials Program catalyzes the development of renewable fuels, reduces landfill use, and promotes a circular economy by encouraging the reduction, reuse, substitution, and recycling of materials in the construction industry. [42]

Overall, although primarily known for their oil and gas industry, the built environment technology ecosystem in Alberta is seeing innovation and government support through a growing funding pool. In July 2024, the Honourable Dan Vandal announced over $21.9M in federal funding for 13 cleantech-related projects in Alberta, many of which are directly relevant to the built environment sector. [45] For example, recipients of this funding include automated methane monitoring software and a Métis Housing portfolio energy efficiency plan. In September 2024, the Albertan government also announced $2.8M in funding toward a carbon capture facility that will convert solid waste from municipal landfills into clean electricity for the grid, projected to launch in 2027. [46]

PRAIRIE PROVINCES

Of the Prairie provinces (excluding Alberta, which has a large enough built environment technology presence to constitute its own category), **Saskatchewan and Manitoba** each have **3** companies, representing a total of **6** companies in the database. Most VC steps have no companies, and the represented VC steps each only feature one or two companies.

KEY VC STEP OBSERVATIONS

- The most represented VC steps are electrical components **(2)**, mechanical components **(2)**, and controls & energy management **(2)**.
- Low-carbon construction materials, sustainable construction materials, and recycling & waste-to-value each have **1** company.

REGIONAL CONSIDERATIONS

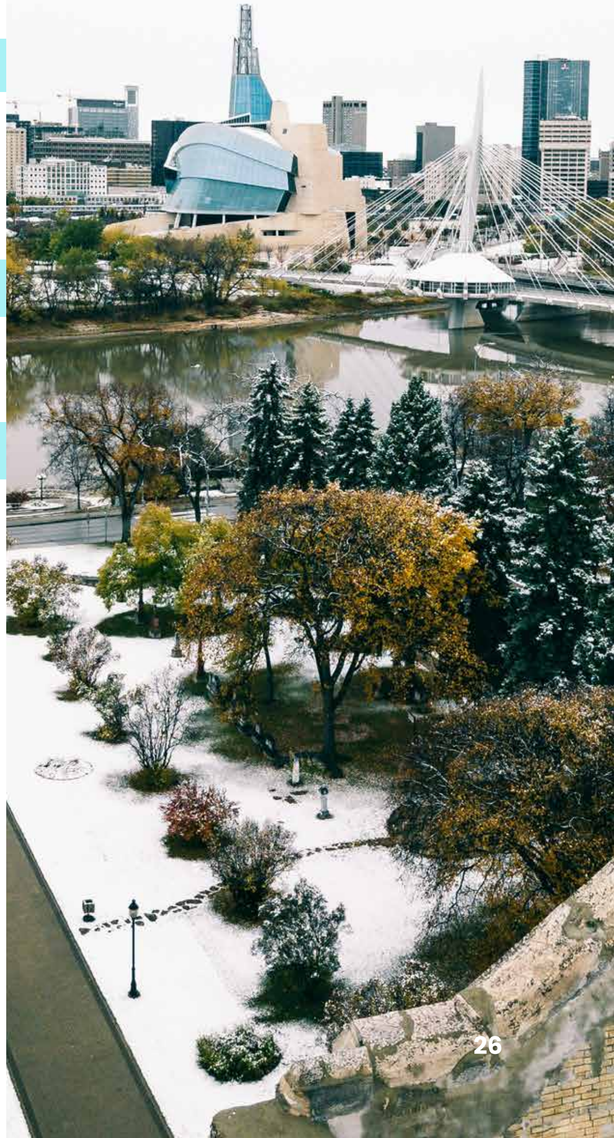
- Each company is located in a different city, and there is not enough data to identify any clusters.

DISCUSSION

According to Prairie Climate Atlas, location-specific climate risks in Manitoba and Saskatchewan include increases in freeze-thaw cycles, winter humidity, precipitation intensity, snow loads, and wind speeds, which create unique needs for the built environment. [47] Some associated needs include preventing or withstanding frost heave, improving ventilation to mitigate humidity, elevating projects, waterproofing ground floors and basements and designing roofs with higher load-bearing capacity. [48] As early as 2013, the Manitoba Green Building Program set goals to "stimulat[e] the demand for green building products and services." The Manitoba government also announced a plan to work with the building sector and achieve a recommission of 80 per cent of buildings that are not meeting high-performance energy standards, as well as deep retrofits for 60 per cent of buildings to meet high-performance standards. [49,50]

High winds predominate in the ecozone. For context, the mean annual wind speed in many places across Manitoba reaches 21 km/h, while Vancouver and Toronto's annual mean is 12 km/h and 16 km/h, respectively. One featured company, Kelso Energy Ltd., leverages this geographical trait with their vertical axis wind turbines (VAWT), meeting unique application needs of remote and agricultural communities, cottages, and ranches. [51,52]

Another opportunity for the Prairies is harnessing sunlight exposure. Saskatchewan boasts the highest solar potential in Canada, and cities like Regina and Saskatoon lead in photovoltaic potential. This positions the province favourably for the integration of solar technologies in the built environment, and solar energy generation and storage solutions have been identified as an area of opportunity. [53]



ATLANTIC PROVINCES

Of the Atlantic provinces, only **Nova Scotia** (**5** companies) and **New Brunswick** (**2** companies) are represented in the database.

KEY VC STEP OBSERVATIONS

- The most represented VC steps in the Atlantic provinces are electrical components **(3)** and low-carbon construction materials **(2)**.
- Controls & energy management, mechanical components, and sustainable design & engineering each have **1** company.
- The Atlantic provinces have no representation in the end-of-life stage of the value chain.

REGIONAL CONSIDERATIONS

- The Halifax CMA is the only city with more than one built environment tech company **(2)**, despite the city's thriving innovation ecosystem with over 300 startups and scaleups, internationally recognized educational institutions, and several innovation startup accelerators and incubators. [54]
- The provinces of Prince Edward Island and Newfoundland and Labrador are not represented in this database.

DISCUSSION

Nova Scotia being the most represented Atlantic province has been consistent across most sectors covered in Foresight's V2VC reporting, likely due to it being the most populated Atlantic province and home to several universities.

All four Atlantic provinces have committed to achieving net zero greenhouse gas emissions by 2050, and the Atlantic Economic Council urges businesses to reduce emissions, citing that they account for over 25 per cent of the region's emissions (excluding the largest 60 emitters). [55]

Though the built environment sector only has a modest presence in the Atlantic region, trends point toward continued upward growth. 2024 also saw stabilizing supply chains and construction material prices. Coupled with the rapidly growing demand for housing projects in the Atlantic region, companies have established a growing confidence to take on a variety of different types of projects in this "new dawn of construction". [56] Additionally, the federal government's Regional Homebuilding Innovation Initiative recently administered $50M to expedite homebuilding in Atlantic Canada, supporting technologies like modular homes, net-zero 3D printing, and mass timber construction, helping decarbonize especially the beginning and middle of the built environment value chain. [57]

PROVINCES AND TERRITORIES NOT REPRESENTED

Several provinces and territories are not represented in the dataset. These include **Prince Edward Island, Newfoundland and Labrador, and all three territories (Nunavut, Northwest Territories, the Yukon).** This is likely due to the regions' limited population. **However, there are still relevant activities and opportunities these provinces can build on**. For example:

- **Sustainable modular construction in northern and remote conditions:** Built environments face different challenges in northern and Arctic climate conditions with significantly lower average temperatures. A compact, airtight, and well-insulated building envelope is one of the most important features that allows for green designs to function, by minimizing heat loss and thermal bridges. On-site energy generation, water recycling, and smart control systems are also beneficial design practices. METCAN Building Solutions Inc. (MBS) is a partnership between ARCAN Construction and the Hay River Metis Government Council, specifically focused on constructing in northern climates. [58] All of their buildings either meet or exceed the Good Building Practices for Northern Facilities specifications followed by Housing NWT and Infrastructure, and are constructed to up to 95 per cent completion before being transported to sites via road, ice road, winter road or river barge.

- **Clean solutions for energy poverty:** As many rural and remote communities across Canada continue to face energy poverty, there are growing opportunities to use clean and renewable energy solutions to fill in these gaps. Across the Canadian provinces and territories, energy poverty is most prevalent in Atlantic Canada and in British Columbia.[59] 60 per cent of Indigenous communities living on reserves in British Columbia do not have access to natural gas, compared to 5 per cent of other British Columbia residents.[60] Organizations and communities that have developed solutions for the challenges they are facing need to be platformed, and capital needs to be redirected towards deploying these solutions. For example, Indigenous Clean Energy (ICE) works with First Nations, Inuit, and Métis communities to scale Indigenous energy efficiency housing projects through their accelerator program.[61] Physical housing traits also influence home energy cost burdens, including the air-tightness and insulation of a building's envelope, while the efficiency of installed systems impacts overall energy consumption. As a result, more efficient built environments typically have lower energy costs compared to less-efficient projects.[59]

Naturally, innovation is more often found in denser, larger population centres due to the clustering of government entities, academic institutions, and networks within a more competitive environment. However, some of the biggest challenges in implementing green built environments—and the resulting consequences, such as energy poverty and the disproportionate impacts of climate change—are most pronounced in remote, rural, and underserved areas. [62] Undeniably, innovation must also be encouraged and supported in these areas.

SECTORAL TRENDS

THIS SECTION COVERS SOME OF **THE KEY OVERALL TRENDS WITHIN THE NATIONAL VALUE CHAIN** AND DISCUSSES HOW **CERTAIN TYPES OF TECHNOLOGIES AND INNOVATIONS CAN PROVIDE SUPPORT IN ADDRESSING CHALLENGES AND IMPROVE SUSTAINABILITY** AS THE SECTOR GROWS.

Resources such as **The Circular Built Environment in Canada: A Strategic Framework for Future Action by CSA Group covers circularity in construction and the reuse of materials,** while **the Zero Carbon Building Standards by Canada Green Building Council (CAGBC) outlines designing new buildings and retrofitting existing ones to achieve zero carbon operations.** [63,64] Considering the existing intentions and impact of these resources, this section focuses on quantifying and contextualizing the ecosystem of current technology companies as represented in the dataset.

LOW-CARBON CONSTRUCTION MATERIALS

41 COMPANIES ARE ASSIGNED TO LOW-CARBON CONSTRUCTION MATERIALS.

The Government of Canada has stated that the demand for low-carbon construction materials will continue to grow over time, and this is bolstered by the country's wealth in natural resources and expertise in forestry and mining. [65]

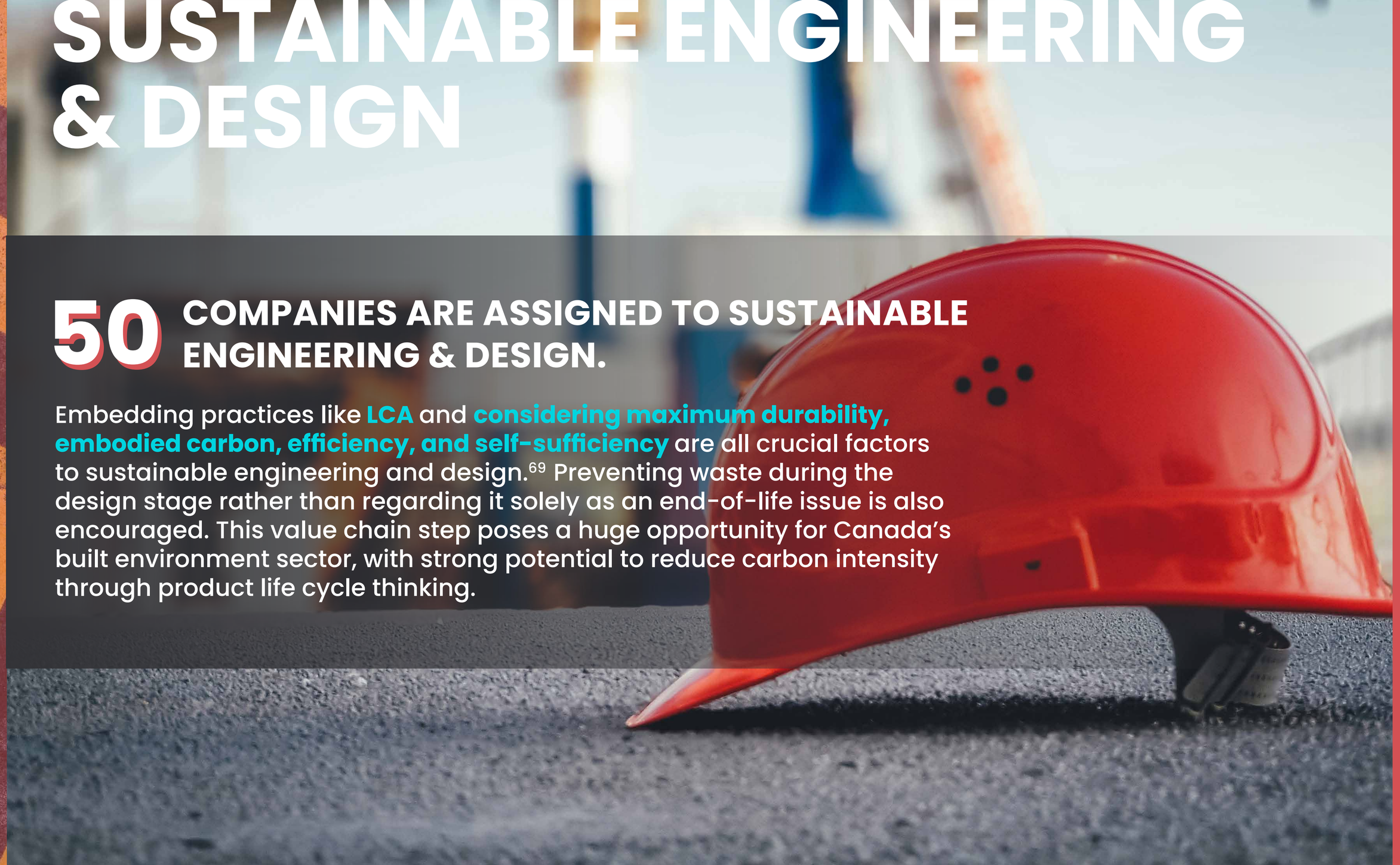
In particular, mass timber and low-carbon cement are large areas of opportunity for Canada.

A LITTLE OVER 10% OF COMPANIES MAPPED TO THIS VC STEP SPECIALIZE IN LOW-CARBON CEMENT,

WHILE OVER 1/3 OF COMPANIES ENGAGE IN MASS TIMBER.

Canada's regulatory landscape can be credited for some of these strengths. For example, the 2020 National Building Code of Canada (NBCC) allows for mass timber construction up to 12 storeys, while British Columbia allows for mass timber structures up to 18 storeys (an increase from the previous 12). [66] [67] Continuing to advocate for the implementation of elements from a Buy Clean policy also incentivizes the reduction of carbon-intensive construction materials, particularly cement, steel, and aluminum. [68] This paves the way for mandated government procurement standards of low-carbon materials, highlighting innovative alternatives like CarbonCure, CarbiCrete, and Carboclave and making their technology increasingly valuable.

SUSTAINABLE ENGINEERING & DESIGN



50 COMPANIES ARE ASSIGNED TO SUSTAINABLE ENGINEERING & DESIGN.

Embedding practices like **LCA** and **considering maximum durability, embodied carbon, efficiency, and self-sufficiency** are all crucial factors to sustainable engineering and design.[69] Preventing waste during the design stage rather than regarding it solely as an end-of-life issue is also encouraged. This value chain step poses a huge opportunity for Canada's built environment sector, with strong potential to reduce carbon intensity through product life cycle thinking.

THE DOWNSTREAM – A CRITICAL PHASE IN BUILT ENVIRONMENT PROJECTS

Comprising electrical, mechanical, and building envelope components, the downstream of the built environment technology sector plays a pivotal role in decarbonization and establishing how energy-efficient, carbon-intensive, and climate resilient a project will be. This section of the built environment value chain has the power to meet both affordability and sustainability needs in housing, through mechanisms like high-performance building envelopes that enable passive design, decentralized renewable energy systems, and durable low-carbon components.

Ultimately, the downstream remains a significant factor in determining the operational efficiency, resilience, and carbon footprint of buildings over their lifetimes. Canada's leadership in renewable energy, coupled with the varying climatic zones that include extreme cold temperatures, breed huge areas of opportunity for innovation in advanced systems that ensure buildings can withstand environmental stressors while maintaining energy efficiency, affordability, and security.The downstream of the value chain also encompasses the opportunity for deep energy retrofits that reduce household energy usage by at least 50 per cent. [70] By adopting and deploying innovative clean technologies like high-efficiency HVAC systems, advanced insulation materials, smart energy management, and low-carbon structural upgrades, deep retrofits simultaneously lower embodied emissions and decrease energy consumption while increasing asset value. With approximately 80 per cent of buildings that will exist in 2050 already standing today, scaling deep retrofits instead of solely focusing on new builds is critical to hitting national climate targets and maximizing the efficiency of Canada's building stock. [71]

Canada will need a substantial increase in skilled trade workers to meet its goal of building 5.8M new homes by 2033. BuildForce Canada announced that Canada's residential construction workforce would need to **grow to over 1,030,000 workers—83 per cent above the status quo—in order to meet this goal.** [72] Especially in regards to HVAC system mechanics for which demand has skyrocketed, labour shortages are projected until 2031, **highlighting the need for skilled workers who can physically implement and maintain Canada's sustainable building technologies.** [7]

ELECTRICAL COMPONENTS

72 **COMPANIES ARE ASSIGNED TO ELECTRICAL COMPONENTS, WHICH IS THE MOST REPRESENTED VC STEP.**

Canada's leadership in renewable energy, especially hydroelectricity, has catalyzed innovation in electrical components for distributed generation and storage. The rapid growth of energy storage solutions, such as lithium-ion and solid-state batteries, is supported by Canadian innovation hubs like the Battery Innovation Center and incentives for residential and commercial adoption of compact storage systems. On-site clean energy generation supports the carbon payback of built environment projects, and is especially ideal for built environment projects in rural or remote locations.

MECHANICAL COMPONENTS

44 **COMPANIES ARE ASSIGNED TO MECHANICAL COMPONENTS.**

This VC step includes companies that develop or support technologies which provide temperature control, water supply, electricity distribution, and fire safety, sometimes meshing with building envelope components. For example, as of July 2024, the number of households with heat pumps in British Columbia had grown by approximately 80 per cent since 2017—from an estimated 142,000 to 254,000.[74]

BUILDING ENVELOPE

14 **COMPANIES ARE ASSIGNED TO THE BUILDING ENVELOPE STEP,**

which is one of the most integral steps to maximizing energy efficiency and enabling passive design to function effectively. In Canada, building envelopes are crucial for optimizing energy efficiency, particularly in harsh climates. Innovations include high-performance insulation, triple-glazed windows, and vapour barriers that improve thermal efficiency while adhering to stringent building codes like the National Energy Code for Buildings (NECB). [75] Passive design principles are becoming increasingly integrated into projects, especially in retrofits for older homes.

CONTROLS & ENERGY MANAGEMENT

54 companies are assigned to controls & energy management.

Smart home systems and energy management technologies have relatively high adoption rates in Canada, driven by rising electricity costs and renewable energy integration that incentivize monitoring energy consumption. Many Canadian companies are leveraging Artificial Intelligence (AI) and Internet of Things (IoT) to optimize energy use in buildings, often supported by programs like NRCan's Green Infrastructure Smart Grid Program, which fosters innovation in grid-interactive technologies. [76]

Where IoT gathers extensive amounts of data, AI empowers the autonomous decision-making of IoT devices. Around 25 per cent of companies mapped to this VC step incorporate the use of AI in their products and services, with this figure projected to grow. Primarily, AI is used to act on the identified patterns that IoT data has shown, and tailor different building operations accordingly. For example, Alert Labs' AI water detection leak and management system outperforms traditional on-site inspections or bill readings by constantly tracking leaks, temperature, humidity, and building power in real time. [77] BrainBox AI uses Artificial Intelligence to connect with HVAC systems via networked control systems or cloud-connected, AI-enabled thermostats. It recognizes the building's thermal behavior, considers external weather patterns and occupant density, and adjusts HVAC equipment in real time for optimal efficiency. [78] Their application of AI connects to HVAC systems through networked control systems or cloud-connected AI-enabled thermostats, recognizing the building's thermal behaviour, taking into account external weather patterns and occupant density, and making adjustments to HVAC equipment in real time.

Most controls and energy management companies with AI integration are located in major cities of Ontario and Quebec. This geographic clustering can be attributed to AI-centric research facilities like the Vector Institute in Toronto or Mila in Quebec, which foster AI development and a strong ecosystem for innovation.

Growing preference for preventative maintenance increases the prevalence of green buildings, but also brings to light the changes needed to reduce AI's own carbon emissions and energy intensity. While Canada has expressed intention to drive billions of dollars in investments to build domestic AI capacity, the energy-intensive data centres (a built environment itself) are riddled with concerns over the AI workload increasing already immense cooling needs. [79,80] In January 2025, a First Nation in northern Alberta also brought backlash to a proposed AI data centre that infringes on treaty rights and would be powered using natural gas. [81] Evidently, as Canada's built environment sector sees growth in using AI in cleantech solutions, the discussion will also need to include the implications of the built environments AI requires to function.

END-OF-LIFE OPTIONS

DECONSTRUCTION, REDEVELOPMENT, DEMOLITION

5 **COMPANIES ARE ASSIGNED TO DECONSTRUCTION, REDEVELOPMENT, AND DEMOLITION.**

Sustainable demolition projects, which involve minimizing environmental impact during the demolition process and maximizing resource recovery for future projects, have been growing in frequency and success across Canada. For example, when the Vancouver House in British Columbia was demolished the 59-storey building resulted in over 100,000 tonnes of concrete, steel, and other materials being recycled. Toronto Pearson International Airport uses specialized technology to sort materials in their sustainable demolition program. [82]

Notably, there are very few companies mapped to this VC step at the moment. This can be attributed to Canadian regulations that currently do not incentivize sustainable redevelopment or deconstruction. One source cites that since the 1940s, federal tax policy has incentivized demolition over reuse through the Income Tax Act that offers deductions presuming that commercial, industrial, and rental residential buildings lose two-thirds of their value within 10 years. [83] Provincial and municipal governments often follow the lead of the federal government, with parking lots paying notably less property tax per dollar of evaluation in the City of Ottawa. Policies like Build Smart: Canada's Buildings Strategy, or the National Housing Strategy, feature strategies for energy efficiency and green construction, but lack guidance for repair and renovation. As the only G7 nation without a national law protecting built-heritage assets, deconstruction (which involves labour-intensive dismantling to salvage materials) is less attractive than traditional demolition without any financial incentives.

However, the rise of interest in sustainable redevelopment and deconstruction is growing. In the City of Victoria, a bylaw requiring demolition permit applicants to submit a refundable deposit has been implemented, incentivizing the diversion of construction waste. [84] Labelled one of the "demolition capitals of North America," construction and demolition waste comprises one-third of landfills in Metro Vancouver. Industry leaders across the region have been advocating for bylaws to help reduce this waste. [85] The demand for end-of-life solutions will continue to increase, so continuing to leverage and invest in sustainable demolition, deconstruction, and redevelopment is an area of opportunity—not only to manage waste or lower embodied carbon but also to ease regulatory transitions.

RECYCLING & WASTE-TO-VALUE

14 **COMPANIES ARE ASSIGNED TO RECYCLING & WASTE-TO-VALUE.**

This VC step supplements the value chain with a cyclic nature by redirecting salvaged and reclaimed materials back into the construction process of the built environment.

Within the companies mapped, wood waste, coal ash, and water or wastewater are prominently featured. A notable observation is that the list of recycling & waste-to-value technology and service providers is non-exhaustive, as regional contractors often pivot and fulfill recycling functions in an ad hoc manner. In essence, there are more options for recycling and reusing construction materials than disclosed in this report, due to their unconventional nature or the gap being filled by a company, service provider, or contractor whose main focus is not recycling or waste management.

RECOMMENDATIONS

VENTURES, INVESTORS, GOVERNMENT, AND INDUSTRIES CAN ALL BENEFIT FROM THESE INSIGHTS ABOUT THE BUILT ENVIRONMENT SECTOR AS WE TRANSITION TO A NET ZERO ECONOMY.

VENTURES SHOULD LEVERAGE THIS REPORT TO:

- Identify innovation opportunities, potential partnerships, and competitors segmented both by geography and position in the value chain.
- Apply a broader understanding of where technologies fit on the value chain to better promote their existing strengths and make informed business decisions.
- Deepen ecosystem awareness to understand how industry clusters operate nationally and identify areas of priority to target.

INVESTORS AND INDUSTRY LEADERS CAN USE THIS REPORT AS A VALUABLE TOOL TO EVALUATE INVESTMENT AND ACQUISITION OPPORTUNITIES, AND TO:

- Understand the value-add that prospective ventures provide by identifying their role in the value chain.
- Determine existing competitors in the ecosystem.
- Identify strengths, opportunities, and potential trends in the Canadian market to inform business decisions.

GOVERNMENTS CAN USE KEY INSIGHTS FROM THIS ANALYSIS TO IDENTIFY TARGETED AREAS FOR SUPPORT IN A MORE COORDINATED AND INTENTIONAL WAY. THEY CAN USE THIS REPORT TO:

- Leverage and build on provincial strengths and regional clusters (e.g., Vancouver, Montreal, Toronto) to support a thriving innovation ecosystem.
- Invest in northern, remote, and rural communities, where some of the greatest needs, climate change impacts, and opportunities for innovation exist. Explore opportunities to foster strategic technological innovation in these underrepresented regions.
- Embed climate resilience and lifecycle emissions into policy and regulation governing the design and construction of the built environment.
- Support ongoing improvement in key areas such as waste-to-value, material reuse (i.e., circularity), and deconstruction, redevelopment, and demolition.
- Continue funding R&D and providing incentives for materials and technologies that improve fire resilience, low-impact development, and on-site clean energy generation to support the anticipated increase in adoption.

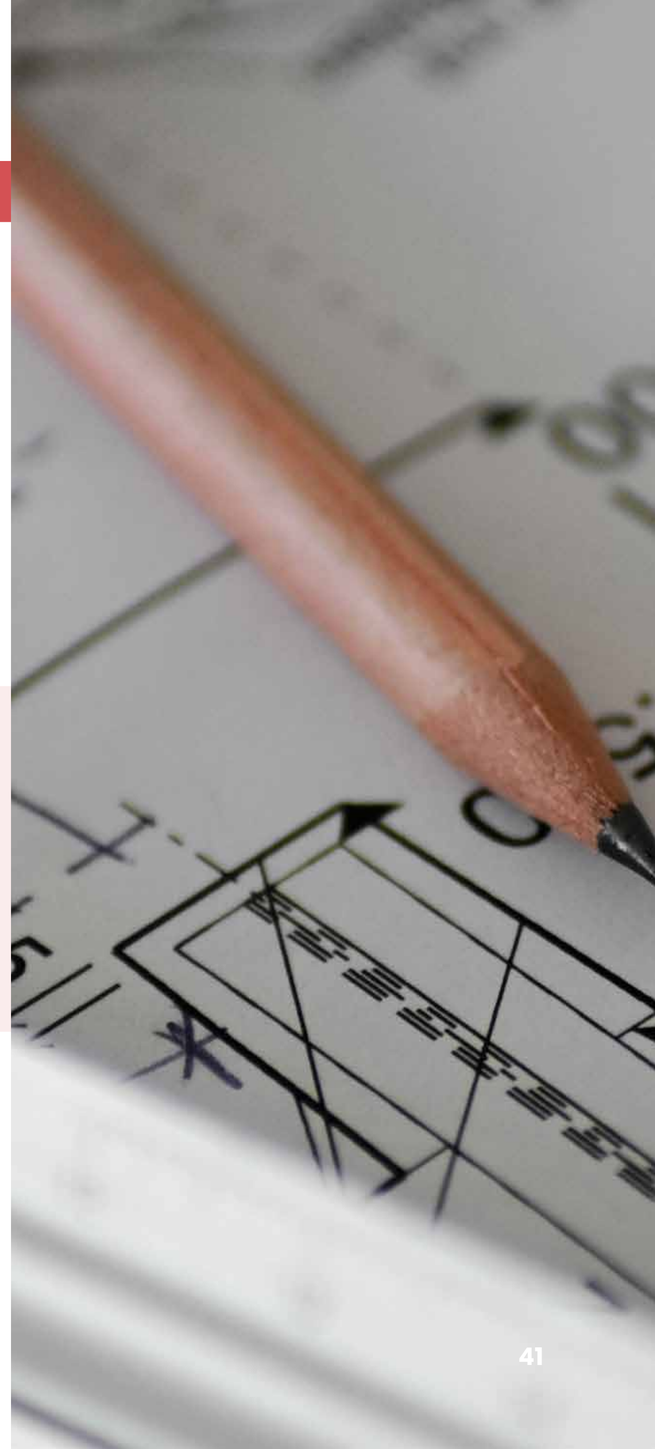
PRE-CONSTRUCTION & MATERIAL PROCUREMENT TARGETS

Through Foresight's work with the buildNEXT program, the pre-construction and material procurement phase has been identified as critical in decarbonizing the built environment sector. It is more efficient to ensure that future new builds are sustainable than rely on retrofitting or dismantling existing structures. Additionally, it can take decades for a new building to offset its embodied carbon through improvements in operational efficiency. [86] Strengthening procurement best practices by emphasizing waste-to-value and recycled products also plays a significant role in decarbonizing the sector. Investors, policymakers, and buyers shape how built environment projects materialize. Table 1 outlines a set of recommendations targeting the pre-construction and material procurement phase that these key players can refer to.

Table 1 Pre-construction & Material Procurement Recommendations

Key Player	Recommendations
Investors	⌂ Use lifecycle carbon assessment (LCA) tools to measure embodied and operational carbon as part of due diligence for new projects. ⌂ Energy and Environmental Designations act as both a value addition and selling point: • LEED® (Leadership in Energy and Environmental Design) • Passive House (Passivhaus) • WELL Building Standard • Net-Zero Energy Buildings • Green Globes • Living Building Challenge (LBC) • BOMA BEST (Building Environmental Standards) • EnerGuide • Zero Carbon Building Standard • Energy Star for Buildings • R-2000 Certification • Envision ⌂ Design materials with end-of-life specifications that facilitate easy replacement and efficient capital asset management.

Key Player	Recommendations
Commercial	⌂ Commercial players include tenants, building operations staff, architects, engineers, developers, real estate firms, or property owners. ⌂ Remain informed on financially incentivizing opportunities (e.g., grants, rebates, low-interest loans) to complete energy efficient retrofits and other home upgrades. ⌂ Adhere to sustainable purchasing and procurement guidelines when updating, maintaining, or replacing components. ⌂ Remain aware of changes to government policies regarding embodied carbon requirements, energy standards, or other sustainability requirements. ⌂ Design for end of life: in the initial processes of architectural design, materials procurement, and engineering, maximize possibilities for sustainable deconstruction, redevelopment, and reuse of materials. ⌂ Invest in deep retrofit opportunities with electrical, HVAC, and building envelope components to extend building life, increase asset value, and lower carbon footprint.
Policymakers	⌂ When creating requests for proposals (RFPs) and permitting procedures, municipal governments can include LCA or embodied carbon measures. ⌂ Consider embedding life cycle costing into relevant policies, especially in the context of building for climate resilience and passive design. ⌂ Adopt low-carbon procurement practices that emphasize the use of low-carbon concrete, steel, and engineered wood products in public built environment projects. ⌂ Develop or promote certifications for low-carbon and recycled materials and projects (e.g., LEED, Environmental Product Declarations), supporting buyers and procurement teams in identifying credible options.
Buyers	⌂ Buyers include developers, contractors, property owners, property managers, and project owners. ⌂ When redeveloping properties, direct salvaged and reclaimed materials from sustainably dismantled projects back into the construction of the future project. ⌂ Use AI and digital twins to optimize material procurement and construction planning, minimizing waste and emissions. ⌂ Use LCA software to calculate and publicly disclose the embodied carbon in procurement decisions and construction projects. ⌂ Train teams on assessing sustainability criteria, such as carbon intensity, recyclability, and material durability.



CONCLUSION

ACROSS CANADA, THE DIVERSE ECOSYSTEMS AND INDUSTRIES THAT SHAPE **THE BUILT ENVIRONMENT TECHNOLOGY SECTOR** DEMONSTRATE ITS **CRITICAL IMPORTANCE** FROM BOTH AN **ENVIRONMENTAL AND ECONOMIC STANDPOINT.**

WITH THE SOARING DEMAND FOR AFFORDABLE HOUSING AND SUSTAINABLE INFRASTRUCTURE TO MEET CANADA'S NET ZERO GOALS, **THE BUILT ENVIRONMENT SECTOR IS POISED FOR SIGNIFICANT GROWTH.** CANADA HAS A PRIME OPPORTUNITY TO LEAD IN **LOW-CARBON AND CIRCULAR CONSTRUCTION INNOVATION.**

Interested in learning more about Canada's built environment technology value chain?

FORESIGHT CANADA

Please contact Alyssa Kelly, Director of Research at Foresight Canada: akelly@foresightcac.com

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