Building One Canadian Economy: A brighter, stronger path made of lower-carbon concrete

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PEMBINA Institute

Who We Are & Why We Partnered

Research + Design = Scale

Pembina Institute

National clean energy think tank focused on research and policy to enable Canada s clean energy transition.

Introba

Global engineering and consultancy firm specializing in building decarbonization and lower impact design solutions.

Why This Partnership

Connecting policy leadership with applied technical insight to enable market transformation at scale.

Speakers

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A Nation-Building Moment

Canada is building at unprecedented scale

From coast to coast, public and private infrastructure projects are reshaping our communities and economy.

Infrastructure choices today lock in costs, emissions, and competitiveness for decades

The decisions we make now will define Canada's economic and environmental future for generations.

Materials matter to long-term value

Strategic material choices deliver economic benefits, reduce environmental impact, and strengthen Canadian competitiveness.

The Backbone of the Built Environment

Concrete is Everywhere

Buildings

Residential, commercial and industrial structures across every Canadian community

Roads and Bridges

Transportation networks connecting our cities, provinces and trade routes

Transit

Public transportation infrastructure enabling urban mobility and economic activity

Water & Energy

Essential systems powering communities and supporting quality of life

Size of Concrete & Cement Industry in Canada

- The cement and concrete industry supports Canada's economy and workers
- It contributes 76B $ and 166,000 Jobs to Canada's economy every year

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Cement, Concrete & Embodied Carbon

A Small Ingredient with an Outsized Impact

10-15%

Cement Share

Cement represents just 10–15% of a typical concrete mix by volume.

~88%

Emission Share

Despite its small volume, cement accounts for approximately 88% of concrete's total emissions.

Cement is the key binding ingredient in concrete

Embodied emissions are locked in on day one

Making early specification decisions critical to reducing carbon impact.

The Pathway to Net-Zero Cement and Concrete

Canada's Concrete Sector is Already a Sustainability Leader

1

Decarbonize conventional methods of making cement

2

Invest in SCMs

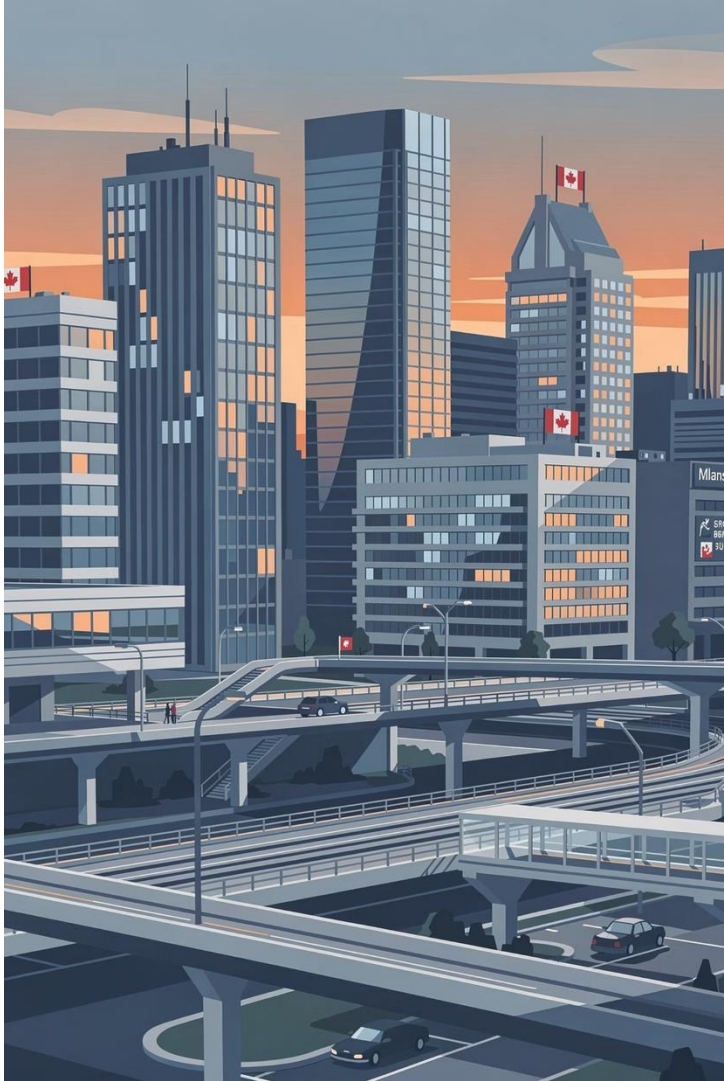
3

Maximize the carbon capture and storage potential of concrete

A Path Forward for Canadian Infrastructure

> *Lower-carbon concrete is not a distant aspiration — it's a present-day opportunity. The technology exists. The industry is ready. The question is whether policy will keep pace.*

These four recommendations provide a clear, actionable roadmap for unlocking market transformation, strengthening Canadian competitiveness, and building infrastructure that serves future generations.



ROADMAP

How Canada Can Scale Lower-Carbon Concrete

Four integrated recommendations to transform the market and unlock economic and environmental value.

01

Modernize codes and standards

Shift from prescriptive to performance-based requirements that align across provinces and municipalities

02

Leverage public procurement

apply the federal Standard on Embodied Carbon in Construction to provincial procurement, sending a technology-agnostic demand signal

03

Align private-sector procurement

Reduce cost and risk across the private sector with targeted incentives to reduce barriers to market transformation.

04

Strengthen workforce readiness

Consolidate guidance, expand training and develop a lower-carbon concrete toolkit for workers across the decision-making chain.

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RECOMMENDATION 1

Modernize Codes & Standards

Early Decisions Lock in Outcomes

Why standards matter

Design-stage decisions lock in emissions

Concrete emissions are largely determined at the design and specification stage and cannot be meaningfully reduced later.

Prescriptive standards limit options

Fixed requirements constrain material choices and restrict lower-carbon solutions early in the process

Fragmented standards increase complexity

Inconsistent approaches across jurisdictions drive up prices and lock out materials

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This is Not a Technology Problem

What industry told us

> *Lower-carbon concrete is technically feasible today. Performance and safety are not barriers. Prescriptive standards limit delivery.*

Technical Feasibility Confirmed

Lower carbon concrete solutions are proven, available, and ready for deployment across project types.

Performance Not in Question

Safety, durability, and structural integrity meet or exceed requirements in real world applications.

Standards Are the Bottleneck

Overly prescriptive codes and standards prevent adoption of innovative, lower carbon alternatives that perform well.

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RECOMMENDATION 1

Modernize Codes and Standards

Prescriptive requirements constrain outcomes

Fixed mix designs and material rules limit the use of lower-carbon solutions, even when performance can be met

Performance based approaches enable flexibility

Outcome-focused standards allow engineers and suppliers to meet safety, durability and structural requirements while reducing embodied carbon.

Alignment across jurisdictions reduces risk

Consistent, performance-based standards support repeatable delivery and reduce rework across projects and regions

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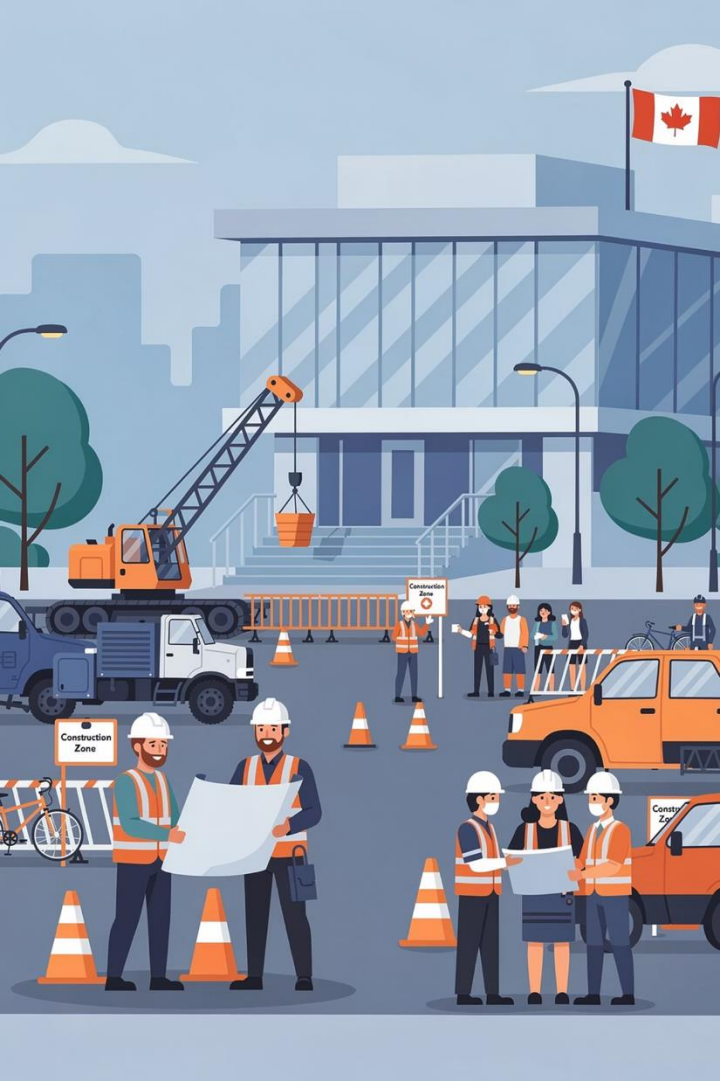
RECOMMENDATION 2

Leverage Public Procurement



Public Leadership Shapes Markets

Why public procurement matters

Market Share

Approximately one third of concrete demand comes from public infrastructure projects.

Setting Expectations

Public projects establish norms and expectations that shape private sector behavior.

Reducing Risk

Government procurement reduces first mover risk by creating predictable demand and accelerating adoption of proven solutions.

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RECOMMENDATION 2

Use Public Procurement as a Demand Signal

Provinces should align with the federal embodied carbon standard

Create consistency across provincial projects and set a clear benchmark for the market.

Send clear, predictable demand signals

Use procurement requirements to signal sustained demand for lower carbon concrete not one off projects.

Enable repeatable adoption

Consistent public procurement expectations allow suppliers and designers to plan, invest and deliver with confidence across projects.

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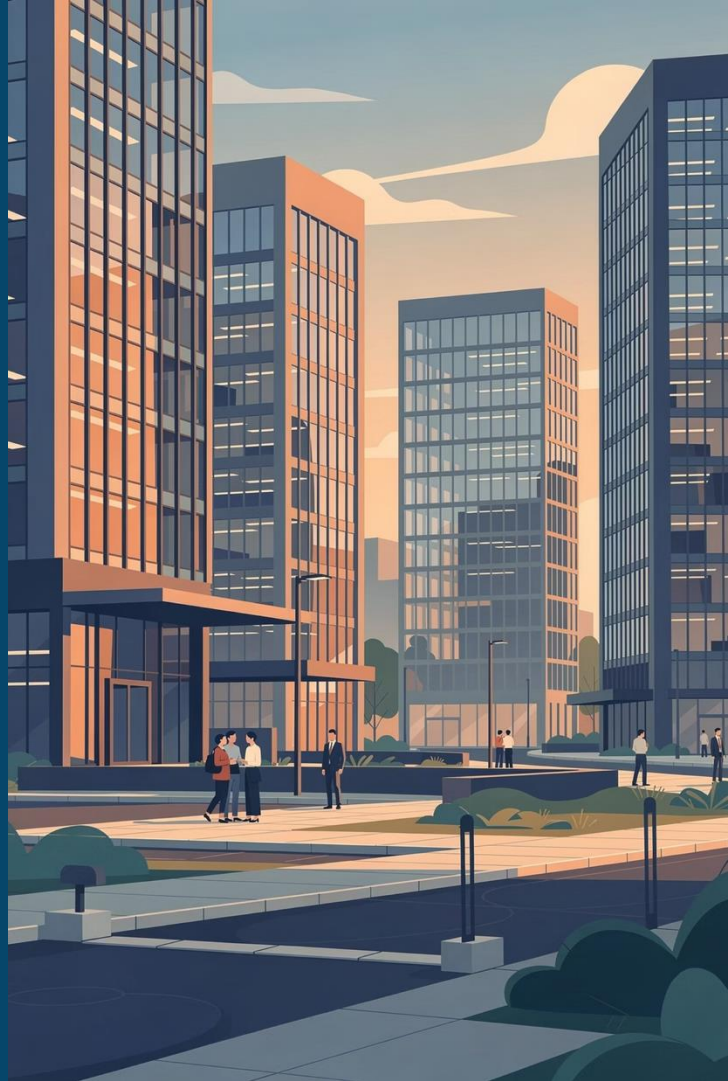
RECOMMENDATION 3

Align Private-Sector Procurement



Scaling Depends on the Private Market

The Private-Sector Reality

Private demand drives scale

Approximately 2/3rds of concrete procurement occurs in the private sector, shaping overall market outcomes.

Risk sensitivity shapes decisions

Private buyers prioritize schedule certainty, cost control and proven approaches to avoid delays and rework.

Fragmentation increases costs

Inconsistent approaches across projects and jurisdictions increase transaction costs and discourages adoption of lower carbon solutions.

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RECOMMENDATION 3

Align Private-Sector Procurement

Consistent signals across public and private projects

Harmonized expectations create a unified market for lower-carbon concrete.

Lower transaction and compliance costs

Alignment reduces the burden of navigating different requirements across projects and jurisdictions.

Accelerate adoption at scale

Reducing risk and uncertainty enables deployment of lower-carbon solutions across the majority of the market.

Targeted incentives to reduce risk

Targeted incentives (e.g., tax credits, permitting efficiencies or cost offsets) can help early adopters manage risk and cost while aligned procurement practices take hold.

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RECOMMENDATION 4

Strengthen Workforce Readiness

Workforce Readiness: Industry Perspectives

Barriers to Confident Adoption

1 Liability and confidence concerns remain widespread

Engineers, architects and project clients are cautious when specifying unfamiliar mixes, even when they meet CSA performance requirements.

2 Limited coordination across roles creates barriers

Without early alignment across design, procurement and construction teams, material options are locked in before lower-carbon alternatives are fully explored.

3 Access to expertise is uneven

Larger firms often have in-house sustainability expertise, while smaller firms, rural contractors and under-resourced municipalities do not.

4 Embodied carbon literacy is uneven

As performance-based standards expand, teams need a baseline understanding of embodied carbon drivers – not just specialist knowledge.

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RECOMMENDATION 4

Strengthen Workforce Readiness

A practical toolkit to enable confident, repeatable delivery

1

A Consolidated toolkit as a single source of truth

Curated lab results, case studies, pilot projects and approved pathways to reduce liability concerns and build confidence.

2

Practical, role specific guidance

Clear resources tailored to engineers, architects, contractors, inspectors and owners, focused on real project decisions.

3

Support early coordination across project teams

Tools that enable earlier alignment on mix selection, procurement timelines and construction sequencing to avoid early lock in.

4

Build foundational embodied carbon literacy

Practical education on embodied carbon drivers and LCA basics so teams can collaborate effectively as performance based standards expand.

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The National Opportunity

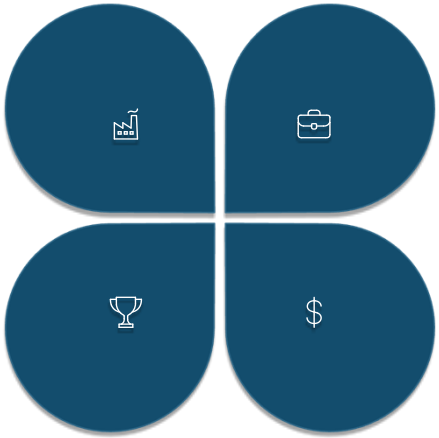
Build Once. Build Better. Build Canadian.

Strong Domestic Industry

Support Canadian producers, suppliers, and innovators in a growing global market.

A Competitive, Future-Ready Canada

Position the country as a leader in sustainable infrastructure and low-carbon construction.



High-Quality Jobs

Invest in skilled trades and professionals who will build Canada's infrastructure for decades.

Long-Term Economic Value

Reduce lifecycle costs while strengthening competitiveness and economic resilience.

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Q & A

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Building One Canadian Economy — together.

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