



CANADA'S FUTURE BUILT ENVIRONMENT: SUSTAINABLE, INNOVATIVE AND RESILIENT

CCI Recommendations for Federal Budget 2017

August 3, 2016

Executive Summary

Canadian Construction Innovations (CCI) welcomes the opportunity to offer ideas to the House of Commons Standing Committee on Finance's pre-budget consultations for Federal Budget 2017.

CCI has consulted broadly amongst key players in the construction value chain in the preparation of these recommendations. CCI appreciates the generous contribution and insights of architects, engineers, contractors, suppliers, owners, academics, federal, provincial and municipal representatives and other thought leaders from across Canada.

These recommendations build on the recently launched new course for innovation as well as the national priorities for green and social infrastructure set out in the last federal budget. They also support meeting the innovation, prosperity and sustainability needs of the future built environment of Canada.

By supporting a comprehensive innovation strategy, Canada can realize the opportunity to gain performance improvements in its construction value chain, to ensure more green and climate friendly infrastructure¹ and to drive new innovations that are delivered to domestic and global markets in a timely and impactful manner. In brief, CCI recommends that:

The federal government commits to the development and implementation of a Construction Value Chain Innovation Strategy to dramatically reshape the future of Canada's built environment over the next 10 years.

This strategy should be enabled in the following ways:

1. That the federal government collaborate across the construction ecosystem to re-examine its existing procurement practices and commit to establishing an innovation set aside of government funding beginning in 2021 and scaled up over a multi-year period.
2. That the federal government establish a multi-year Built Environment Innovation Pilot (BEIP) fund commencing in 2018.
3. That the federal government support R&D collaborations through the development of networks and incubators dedicated to transforming Canada's future built environment for the next 5 years.
4. That the federal government capture the unique opportunity to partner with the construction ecosystem created by CCI. This joint effort will transform the construction sector and support our ability to meet the national priorities laid out in Budget 2016 around green and social infrastructure, transportation, climate change, and clean technology.

¹ Infrastructure refers to the entire built environment that comprises roads, bridges, underground infrastructure, buildings, industrial facilities as well as general installations.

About CCI

CCI is the voice for innovation across Canada's Construction Sector stakeholders. With representation from construction owners, architects, engineers, general contractors, industry suppliers, urban planners, and others, CCI is charting a course to instill a new culture of innovation across the Canadian construction sector. By bringing together key players in the value chain², CCI has created an industry-facing innovation ecosystem and driving new collaborations to transform the Construction Sector to improve the sector's overall performance and support Canada becoming a world leader in this critical area.

The Opportunity: Economic, Environmental, and Social Imperatives

In its May 2016 report on the future of global construction, the World Economic Forum highlights the strong impact that the construction industry has on the global economy, environment and society as a whole. As pointed out in this report, the industry has a vast potential for improving productivity, efficiency, and its overall performance, as well as to enhance quality of life and to address some of the most pressing environmental challenges.

These global observations are fully applicable to Canada. As the fifth largest construction sector in the world, the Canadian construction industry has an important role to play in showing global leadership and improving its capacity to respond to these critical needs.

According to the Conference Board of Canada, the Canadian construction sector generates close to \$100 billion in economic activity and contributes to 7% of the nation's GDP. By employing over 1.25 million workers in Canada, the sector accounts for roughly 7% of the country's total workforce. The sector plays a pivotal role in supporting economic value creation in almost all other sectors of the Canadian economy, both public and private, through an array of constructed physical assets, such as buildings, manufacturing/industrial facilities, and transportation infrastructure amongst others.

At the same time, according to the National Research Council, the sector contributes over 40% to Canada's greenhouse gas emissions and utilizes over 50% of Canada's natural resources. Construction also has a significant impact on the lives of Canadians on a daily basis – from homes, recreation and education facilities, hospitals and clinics and transportation systems. The materials used, the designs incorporated and the overall built environment has a profound impact on the health and well-being of our Citizens.

The Challenge: Innovation and Transformation Needed

Over the past decade, the construction sector's productivity has stagnated and its capacity to innovate has been limited. As tracked by Statistics Canada, the R&D effort of the Canadian construction sector is disappointing. With a reported R&D intensity of only 0.06% of GDP, the sector has the lowest R&D spending of all major industrial sectors in Canada.

² The construction sector's value chain includes representatives from a wide array of stakeholder groups such as owners, architects, engineers, suppliers, contractors, urban planners, allied services (bonding, insurance, claims consultants and financial sector) etc.

This trend must be reversed. As global megatrends such as climate change, the growth of the world's middle class, and increasing pressure on global resources continue to take hold, it is imperative that construction sectors around the world transform to ensure maximum productivity, resource efficiency and sustainability. Canada has failed to keep pace with its competitors as its R&D intensity lags those of other OECD countries. This presents both a challenge to the sector's performance at home but also its competitiveness and ability to win in rapidly expanding world construction markets.

Government as a Key Partner

All levels of government within Canada play a pivotal role in the shape and vision for Canada's built environment. In addition to establishing investment priorities, infrastructure policies, and regulating the sector, governments are also major owners and procurers of constructed assets.

The federal government has a unique leadership opportunity. It has identified important national priorities for boosting Canada's green and social infrastructure, and addressing the country's greenhouse gas emissions. It will take a renewed and transformed sector to truly meet these objectives. Given the unique dual role governments have, as a regulator and buyer of construction services, CCI believes it is critical for the federal government to play a leadership role and deepen its partnership with the sector's innovation ecosystem created by CCI to unlock the potential of innovation to contribute to these efforts.

As outlined in the last federal budget, this government has recognized that bold, disruptive ideas drive economic growth. By strengthening the link between private sector dynamism with Canada's innovation capacity, the government has set a new course in impactful innovation delivery. Given its scale and complexity, it will take a significant effort by many to transform Canada's construction sector. But the rewards will be plentiful and impactful. The opportunity exists for dramatically improved sector performance, market expansion and more sustainable and resilient infrastructure. Building on the key ideas set forth in Budget 2016, CCI remains an eager and equipped partner to lead and support these efforts within the construction sector.

By consulting key stakeholders, influencers and leaders in the construction supply chain – contractors, architects, engineers, federal, provincial and municipal governments, and academics-- from across Canada, CCI has championed a dynamic and overarching innovation strategy that will drive these opportunities and deliver market-ready solutions.

CONSTRUCTION VALUE CHAIN INNOVATION STRATEGY

The Construction Value Chain Innovation Strategy has at its foundation 3 core pillars that will work together to drive substantial change in the sector over the next 10 years:

Commercialization Pillar: Procurement Set Aside

As described by stakeholders across the country, in the majority of cases, existing procurement approaches are having a dramatic chill effect on innovation. To counteract this situation, this pillar envisions the establishment of a set-aside of funding within existing government procurement programs that would be available to directly support the demonstration of new innovation into projects. Modelled after strategies used in the United States, such as the Federal Highway Administration

program, this set aside approach would target bringing commercially ready innovations to market while ensuring accountability on spending is maintained.

It is anticipated that the innovation spurred through this type of leadership in government procurement will have a compounding spillover effect with other procurers of construction products and services. As new innovations are adopted in public sector projects, a critical momentum is established for replication and the pursuit of additional innovation in the private sector.

CCI is well placed to support the government in the development of this approach. It is important to emphasize that changes to procurement practices should be carefully considered and designed. As a result, CCI recommends that this set aside be developed and announced early with actual funding commencing in 2021 with subsequent scale up through a multi-year approach. This would ensure sufficient time for the private sector to respond by making innovation investments that capitalize on these opportunities.

Pre-Commercialization Pillar: Pilot Projects Fund

This pillar envisions the establishment of a pilot project program – the Built Environment Innovation Pilot (BEIP) fund that would seek to mitigate the risk of the introduction of new innovative solutions to the marketplace. This funding, matched through significant industry co-investment, would be available to the breadth of players across the sector -- from public or private owners to contractors, equipment manufacturers, material suppliers and others. CCI is well prepared to work with government to ensure the appropriate oversight and allocation processes are established. It is envisioned that the program would foster partnerships and encourage collaborations with post-secondary institutions, NRC, small technology developers, and other players in the infrastructure space. Replicability will be assessed and considered in setting project priorities to support broader uptake in the sector once utility is proven.

CCI believes this fund should be established immediately and increased over the next 5 years to address the existing productivity gap and drive commercialization success of new innovations.

Idea Generation Pillar: Smart, Targeted Networks

Stakeholders consistently reported that the existing academic and public R&D community of the construction sector value chain is fragmented and lacks direct connection to industry needs. To address this, this pillar envisions the identification of strategic R&D areas where Canada has the highest potential to deliver the greatest value. CCI will create the necessary networks and incubators to deliver strategic and targeted research. Academics and other research organizations will be key participants in these networks.

Specific Recommendations

Based upon the above information and feedback from a wide area of stakeholders, CCI specifically recommends the following be considered for Budget 2017:

The federal government commits to the development and implementation of a Construction Value Chain Innovation Strategy to dramatically reshape the future of Canada's built environment over the next 10 years.

This strategy should be enabled in the following ways:

1. That the federal government collaborate across the construction ecosystem to re-examine its existing procurement practices and commit to establishing an innovation set aside of government funding beginning in 2021 and scaled up over a multi-year period.
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Additional Background Material

For more detailed information, CCI would recommend the following documents:

1. *Shaping the Future of Construction: A Breakthrough in Mindset and Technology*, World Economic Forum Report, May, 2016; <https://www.weforum.org/projects/future-of-construction/>
2. *Roundtable Discussions on CCI Innovation Strategy*, CCI Innovations Report, July 15, 2016; <http://www.ccinnovations.ca/>
3. *CCI Technology Clearinghouse*; <http://www.ccinnovations.ca/clearinghouse/>

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