LOW-CARBON CONSTRUCTION OF CANADA'S "BUILT ENVIRONMENT"

Challenges and opportunities for creating green construction jobs

Buildings are the fourth highest source of greenhouse gas emissions by economic sector in Canada, and will surpass electricity to become the third highest source by 2020. Reducing the greenhouse gases (GHGs) emitted by buildings is a critical area for the introduction of measures to reduce carbon emissions and energy use.

The current state of the building industry presents a unique opportunity to contribute to GHG reduction while moving the construction industry away from precarious employment and towards greener jobs that are highly skilled and fairly paid. By tackling greenhouse gas emission reduction with work-focused strategies, policy makers, unions and industry leaders can achieve the goals of reducing GHGs while creating environmentally responsible employment.[1]

Sectoral analysis of Canada's greenhouse gas (GHG) emissions

Table 1. GHG emissions by economic sector in million metric tons of carbon dioxide equivalent (Mt CO2-e per year) excluding Land Use, Land-Use Change and Forestry (LULUCF)

	1990	2000	2005	2011	2012
Transportation	128	155	168	170	165
Oil and Gas	101	150	162	163	173
Electricity	94	129	121	90	86
Buildings	70	82	84	84	80
Emission Intensive and Trade Exposed Industries	93	85	87	78	78
Agriculture	54	66	68	68	69
Waste and Other	50	51	49	49	47
National Total	**591**	**718**	**737**	**702**	**699**

Source: Environment Canada, 2014[2]

BACKGROUND

Buildings represent over one third of the total GHG emissions and energy use, on average, in Canada and internationally.[3] This includes the construction of new buildings, the maintenance of existing buildings, producing construction materials, and the consumption of energy in the construction and the operation of both residential and commercial buildings. Even worse, while many economic sectors are predicting a decline in GHG emissions, building emissions are expected to increase by 13% by 2020, according to Environment Canada report "Canada's Emissions Trends," October 2014.[4]

Since buildings account for such a significant percentage of greenhouse gas emissions, the construction industry will need to shift to low-carbon practices if efforts to mitigate climate change are to be successful.

Projected emissions trends by sector

Table 2 Change n GHG emissions by sector (Mt CO2-e per year)

	2005	2012	2020	% Change, 2005-20
Transportation	168	165	176	5%
Oil and Gas	162	173	200	23%
Electricity	121	86	82	-32%
Buildings	84	80	95	13%
Emission Intensive and Trade Exposed Industries	87	78	90	3%
Agriculture	68	69	69	1%
Waste and Other	49	47	50	2%
Expected LULUCF Contribution	n/a	n/a	-28	n/a
National Total	**737**	**699**	**734**	**-0.4%**

Source: Environment Canada, 2014[5]

Buildings are the fourth highest source of greenhouse gas emissions by economic sector in Canada

Construction plays a significant role in our economy, accounting for 14% of GDP.[6] It also employs approximately 8% of the labour force in most industrialized countries such as Canada. The shift toward low-carbon construction will inevitably impact those employed in order to achieve their desired environmental impact, without harming the economy or decreasing employment.

Green jobs are those with environmentally responsible work practices which use green materials that contribute to reducing the greenhouse gasses produced by work. Green jobs are able to demonstrate a steadily shrinking GHG footprint over time.

Greening construction work, however, requires coordinated, holistic approaches: choosing environmentally responsible materials, developing training and education for workers in new, low-carbon techniques from installation through to repair, increasing 'thermal literacy', improving policy tools on standards, building codes and regulation, involving occupational health and safety standard setting and enforcement. In other words, greening the construction industry will create changes in choice of materials, training, the integration of the trades, and work practices.

Organized labour has a distinct role to play in facilitating workers' effective role in the reduction of carbon emissions in the building industry. Climate bargaining to green

the whole chain of construction work and green plans to develop long-term, stage by stage low-carbon shifts in production can lead to Improvements in health and safety, the formalization of employment, and improved training. And all require active, unionized labour.

Organized labour has a decisive role in reducing GHG emissions from our "built environment"

Nature of labour in the building sector

The liberal market economy in which Canadian construction workers are employed creates a double challenge for policy-makers: reforming the sector, and lowering GHG emissions from the built environment. The industry undergoes "boom and bust" cycles, and has developed a structure where sub-contracting and casual, precarious, low-paid employment is widespread, but uneven. This highly insecure nature of construction jobs makes improved training difficult, especially in new practices, techniques, and skills which support a shift to a low-carbon building industry.

Additionally, the building industry often has poor working conditions, especially in regards to worker equality and safety. This may be exacerbated by the introduction of new green practices, if not balanced with proper training and improvements to work conditions.

Employer resistance to improved practices

Initially, there may be a lack of employer commitment to improving vocational education and training to incorporate greener practices, due to either cost or lack of capacity of the employer. Employers may also resist the introduction of greener industry-specific policy, such as improved building codes, as many see government involvement as interfering with their business and profit. They may also resist any green practices due to the very nature of their business – as it may present a trade-off of short-term costs for long-term pay-off.

However, as the market begins to demand more energy efficiency and climate change-mitigating construction, developers with the knowledge and capability to build low-carbon structures will have an advantage over those who are resisting change. This, in turn, will provide incentives for employers to embrace improved employment and training practices

Issues in policy implementation

Building codes present a particular challenge in Canada where consensus and cooperation between federal, provincial, and municipal levels of government is needed, and as a result changes in building codes and policy can take decades. Therefore, building code changes in favour of green improvements often are too slow to respond to the current climate crisis. Building codes also present another challenge, as they must be firm enough in their regulation to ensure compliance, yet flexible enough to allow for changing needs.

Compliance in current regulation alone has difficulties, as there is currently inadequate monitoring of green practices and green standards, as well as a lack of training within building inspectors on best green practices. Any new green certification or standards must account for the appropriate measurements of newly introduced standards, but must also incorporate measuring and ensuring compliance over time as buildings age and deteriorate.

New green building standards often become the ceiling for compliance, and not the floor. Additionally, differing voluntary building standards have created confusion within the industry and require clearer directives from government in establishing new low-carbon standards.

Reducing GHG emissions caused by buildings can improve working conditions and create green construction jobs

Challenges and the role of retrofitting

Retrofitting older buildings will be of critical importance in tackling carbon emissions and the built environment's role in climate change. New builds constitute only 2% of building stock per year,[7] and so retrofitting older buildings is integral to the building industry's contribution to slowing climate change. Is there a work force trained and available

to take up large-scale retrofitting? At present the federal and some provincial governments are proposing to provide significant funds for retrofitting buildings. But serious expansion of retrofitting requires serious expansion of training for retrofitting and retrofitters. On training and employment, there is, to date, silence in the policy circles of Canada.

Precarious employment impedes environmental literacy. A nation-wide campaign for environmental literacy for all ages in needed: young people who are the next generation of construction workers; current construction workers in all trades and professions; workers in other sectors seeking to shift to construction; the prematurely elderly who seek to re-enter the construction labour force.

Greening Canada's "built environment" provides an opportunity to reduce Canada's GHG emissions, while moving toward skilled, fairly paid green construction jobs.

The precarious nature of labour in the construction and building industry creates barriers that prevent workers from participating in the creation of a low-carbon building sector.

Effective climate change mitigation in the building sector is contingent on a highly trained workforce. Canada needs to invest much more in training this workforce to ensure that it can deliver the low-carbon construction objectives that we need to address climate change.

In addressing climate change, policy makers have an opportunity to examine and restructure labour in the building industry, while improving the economy and lowering GHG emissions.

Collaboration between government, developers, and organized labour is key to creating a sustainable, low-carbon construction industry.

Endnotes

1 John Calvert, "Built Environment Working Group Proposed Baseline Report Process," *Adapting Canadian Work and Workplaces to Respond to Climate Change*, 2015, 2.

2 Trista Wood and Warren Mabee, "ACW Baseline Report: Energy," *Adapting Canadian Work and Workplaces to Respond to Climate Change*, 2015, 5.

3 Calvert, 2.

4 Wood and Mabee, 6.

5 Ibid., 6.

6 "Industry Facts," Canada's Building and Trade Unions, accessed May 20, 2016, http://www.buildingtrades.ca/where-we-stand/industry-facts.

7 Calvert, 12.

Further reading

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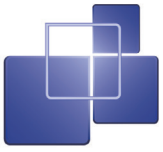

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