

# Addressing The Canadian Skilled Labour Shortage

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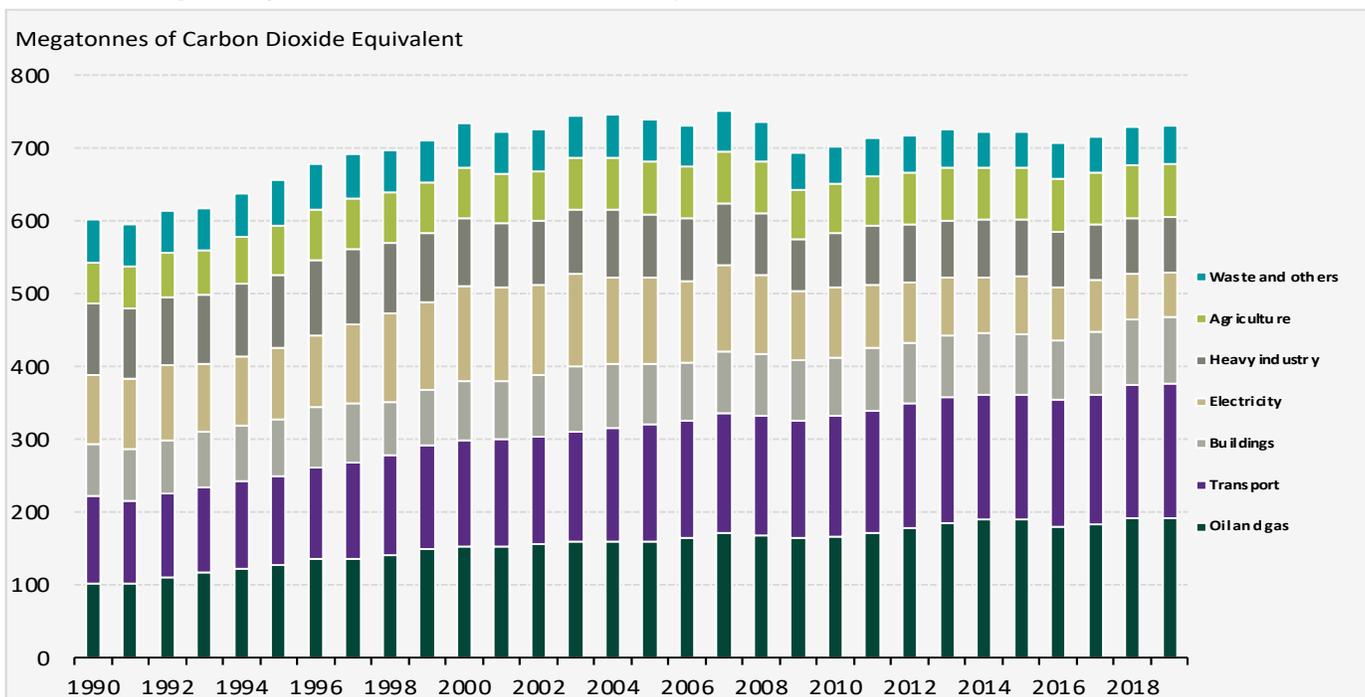
## Executive Summary

- The transition to an electric vehicle ecosystem has the possibility to greatly reduce Canada's greenhouse gas emissions, with nearly 25% currently generated from this sector alone.
- Moving to a low-carbon transportation sector requires a skilled labour force that has the necessary technical training to support emerging technologies that accompany it.
- Unfortunately, Canada is currently facing a skilled labour shortage driven in part by demographic factors and the global pandemic.
- Canada can take a layered approach with short-, medium-, and long-term measures addressing financial incentives, reskilling, and academic, educational, and vocational training programs.

The August 9th, 2021, United Nations' release of the Intergovernmental Panel on Climate Change assessment report painted climate change in clear terms: "Code Red for Humanity." Unless immediate, large-scale, and sustained reductions of carbon dioxide emissions and other greenhouse gases (GHGs) take place, limiting warming to the Paris Agreement targets of 1.5 to 2 degrees Celsius will be beyond reach.<sup>1</sup> To prevent the further deterioration of the climate, Canada must act swiftly to reduce its GHG emissions.

According to the Canadian federal government's GHG inventory (see figure 1), transportation accounts for nearly a quarter of GHG emissions.<sup>2</sup> Nearly half of the emissions from the transportation sector come directly from passenger vehicles and light trucks, which is why the federal government has placed heavy emphasis on decarbonizing the transportation sector and transitioning to an electric vehicle ecosystem.<sup>3</sup> One non-trivial caveat remains: many key occupations required to support the electrification of the transportation system will see a rise in demand and changing workplace skills, which the country is currently ill-equipped to meet.<sup>4</sup> The technology that accompanies the transition to an EV ecosystem will require attracting new talent and retaining some of the existing workforce, in both blue- and white-collar occupations.

**Figure 1 | Greenhouse Gas Emissions by Economic Sector, Canada, 1990 to 2019**



Source: Environment and Climate Change Canada. Retrieved from <https://open.canada.ca/data/en/dataset/779c7bcf-4982-47eb-af1b-a33618a05e5b>

## Labour Dilemma

Canada is facing a shortage of skilled labour in many sectors – transportation is no exception – which limits the ability to meet the country's GHG reduction targets. The current federal government objectives are to have zero emission vehicles represent 10% of all light-duty vehicles on the road by 2025, 30% by 2030, and 100% by 2040.<sup>5</sup> Some of the provinces have set similarly ambitious targets although the question remains: can the skilled labour needed to support this rapid growth and changing technology be supplied quickly enough?<sup>6,7</sup>

The trends in blue collar roles needed to support the electrification of the transportation system are unfavourable (see figure 2). Since 2014, many of the key Red Seal trade group occupations including electricians, automotive service technicians, and machinists, have seen a constant number of certifications compared to a downward trend in new registrations. This pattern is concerning given that certifications in these trade groups are often requirements for the blue-collar roles needed to support the transition and growth of an EV ecosystem.

**Figure 2 | Number of Certifications & Registrations by Year for Select Trade Groups<sup>8</sup>**



Source: Statistics Canada. Table 37-10-0089-01 Number of certificates granted to registered apprentices and trade qualifiers

The skilled labour headwinds are equally present in white collar occupations such as the many engineering roles involved in the EV transition. For example, in July 2021, Global News reported that recruiters for white collar positions have been adding additional perks to entice candidates including salary increases and more paid time off, as they grapple with labour shortages.<sup>9</sup> Additionally, according to the Quebec Employers Council, a survey from April 2021 revealed that 94% of Quebec firms reported difficulties filling vacant positions.<sup>10</sup> As a result, nearly half of the 430 firms surveyed, which spanned all regions and industries under the North American Industry Classification System (NAICS), reported having to decline contracts and 39% had to delay investments.<sup>11</sup> The migration impacts from fossil fuels to the EV ecosystem for some occupations (i.e. accountants) should prove transient rather than structural, nevertheless the evidence is clear on the negative economic impacts produced by labour shortages.

Several factors are behind these trends. As revealed in past editions of the Canadian NAS, workers mention not having enough work or income as being a key factor for discontinuing their trade completion, along with essential skills deficits.<sup>12</sup>

Another central reason reported by discontinuers for not completing their apprenticeship was financial constraints.<sup>13</sup> Since apprenticeships are largely industry driven, apprentices may not have access to support themselves financially throughout the duration of the program.<sup>14</sup> More awareness and use need to be made of several existing supports such as grants, loans, tax credits, and the Employment Insurance (EI) program.

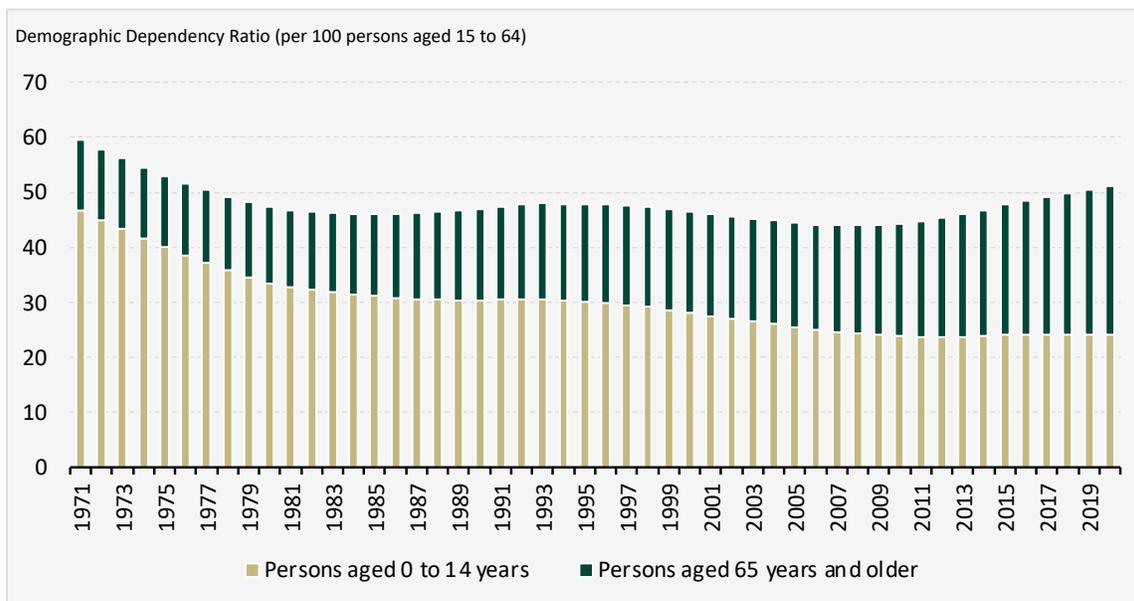
Current demographics also have adverse effect on the skilled labour shortage. The NAS highlights varying participation rates and underrepresentation among women and immigrants, while other groups such as indigenous and youth experience different challenges.<sup>15</sup> For example, “the majority of apprentices were male (86.3%), Canadian-born (91.3%), non-aboriginal (93.7%), and did not belong to a visible minority group (91.8%)”.<sup>16</sup> At the same time, The aging population dilemma (see figure 3) is equally worsened by pandemic job losses, with provinces like Quebec set to lose 850,000 members of the labour force leading up to 2025.<sup>17</sup> The anticipated lift in retirements will need to be tempered by an increase in qualified workers from underrepresented groups joining the workforce to unlock economic growth.

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The National Apprenticeship Survey (NAS) is a collaborative effort by Statistics Canada and Employment and Social Development Canada that examines factors affecting the completion, certification, and transition of apprentices into the labour market.

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**Figure 3 | Demographic Dependency Ratio, 1971 to 2020, Canada**



Source: Statistics Canada, Center for Demography, <https://www150.statcan.gc.ca/n1/pub/91-215-x/2020001/sec2-eng.htm>

The global pandemic has brought psychological challenges to labour market participants leading to frictional unemployment. According to Elisabeth Starenkyj, President of Montreal based executive search firm La Tête Chercheuse, the pandemic encouraged many to take their retirement early, to rethink their career aspirations, or to change occupation.<sup>18</sup> While the impact may correct itself over the medium- to long-term, it has adversely impacted many industries contributing to the ~9.3% rise in job vacancies from the first quarter up until the last quarter of 2020.<sup>19</sup>

## International Perspectives

### Japan

The Japanese have faced a demographic crisis for many years, with over 27% of the population over the age of 65, compared to 18% for Canada.<sup>20 21</sup> In response to the rapidly ageing population and shrinking labour force, the country has seen a higher labour force participation rate among the 65-year-old and up segment of the population at 25.3% in 2019, compared to 14.9% for Canada.<sup>22</sup> According to a 2018 OECD report *Working Better with Age: Japan*, the ageing workforce dilemma hampers improvements in living standards and the financial sustainability of Japan's spending on social programs.<sup>23</sup> Japan's high participation rate is also tied to social factors that differ relative to Canada, such as low immigration, and reverence for elders. Nevertheless, encouraging a higher participation rate among older age segments in Canada could help temporarily offset impacts in the short term and is worth considering given the time it takes to educate and train new employees in the skilled trades that are encompassed in the electrification of the transportation system.

### China

The importance of a highly skilled workforce that can support the electrification of the transportation sector has been a priority for the Chinese government since at least 1995.<sup>24</sup> Since then, several strategy plans have emerged, with the most recent being the Made in China (MIC) 2025. In response to the technological changes that are promoted in the MIC 2025, the Chinese government places an emphasis on expanding and developing academic and vocational education.<sup>25</sup> Due to jobseekers' lack of credentials and students' lack of practical experience, employers have been complaining to the government for some time. This prompted the central government to release the Guidance for the Development of Manufacturing Talent plan which aims to reform the education and training system to better meet the skill requirements for MIC 2025.<sup>26</sup> The Chinese government plans on expanding vocational training at both secondary and tertiary levels, but challenges such as shortage of students, teachers, and teaching facilities are limiting progress.<sup>27</sup> As a result, the government has encouraged enterprises to play a larger role in the supply of vocational education and training, as well as introduce active employment policies to promote participation of vulnerable groups, boosting compensation for skilled workers.<sup>28</sup> Canada should follow suit in having larger private sector contributions to vocational education and training, given that many of the skilled trades require knowledge built up through practical experience. Additionally, targeted programs to increase participation of minorities and underrepresented groups in the skilled trades required to support the EV ecosystem should also be ramped up in Canada. The newly unveiled Canada-wide \$10 a day child-care policy, encouraging higher labour force participation rates from women, is already a step in the right direction with significant positive social and economic benefits in the years to come.

## United States

The United States recently addressed the skilled labour shortage through the *American Jobs Plan*. The stimulus package places emphasis on job creation in the EV ecosystem by spurring domestic supply chains from raw materials to parts, retooling factories to compete globally, and supporting workers to produce EV batteries domestically.<sup>29</sup> Furthermore, the government intends on “promoting strong labour, installation, and training standards” for the national network of 500,000 EV charging stations that will be built through partnerships between state and local governments and the private sector by 2030.<sup>30</sup> The Biden administration also proposes filling the skilled labour gap by pairing job creation with next generation training programs, specifically by calling for USD \$40 billion in a Dislocated Workers Program and sector-based training. The funding will be used to support workers who have lost their jobs from industry changes to gain new skills and receive career services for in-demand jobs.<sup>31</sup> In response to many technological innovations produced through the electrification of the transportation sector, the U.S. has seen tight collaboration between unions, automakers, utilities companies, and educational institutions to form the curriculum for the U.S. Electric Vehicle Infrastructure Training Program (EVITP).<sup>32</sup> As with other skilled trades, the program has high standards requiring all participants to pass a certification exam demonstrating proof of knowledge and skill, while the jointly developed up-to-date curriculum provides real-time perspectives on the opportunities and challenges of market technology in training. To date, the EVITP has trained 4,000 electricians across the U.S. to install and maintain charging stations. Canada should equally develop a cross-sectoral program that sees curriculum developed by key stakeholders according to job market needs and targeted towards population segments most likely to be disrupted by the electrification of the transportation sector.

## Implications and Recommendations

The electrification of the transportation sector brings tremendous opportunity to cut Canada’s greenhouse gases and position the country as a leader in adoption of innovative technologies. To address the broad skilled labour shortage that threatens to impact the transition of the electrification of the transportation system, Canada can incorporate learnings from other countries facing similar issues.

In the short term:

1. **Encourage older workers to prolong their participation in the labour force**, similar to the situation in Japan – who does it out of necessity. Although this will be difficult in practice, since any hours worked would eat into retirees’ pension incomes, one way it can be accomplished is by offering adjustments to pension plans and income tax credits for employees in high-demand sectors. This policy has the benefit of delaying the impacts of too many near retirement age exiting the labour force and furthering the effects of the labour shortage. Extending the duration of participation would permit a non-trivial volume of workers to join the labour force and obtain the required training to close part of the gap. Despite the short-term financial cost, the alternative would be productivity losses from economic stagnation. Given the rise in workers rethinking career aspirations, and advancing their retirement decisions due to the pandemic, encouraging employees that still have several years of work available before retiring to remain in the labour force would help meet the labour needs in the short term. Communication of such an option would be required on behalf of employers to their employees.
2. Job instability was the most common reason reported by discontinuers for not completing their apprenticeship according to the NAS. By **expanding employment insurance benefits for new apprentices** which have been on the decline in Canada, **the government can encourage more registrations and certifications**. This would

also help any current apprentices continue their training even if they are between jobs, strengthening a needed layer of stability to help counter fluctuations in employment which are largely industry driven.

3. Like the United States' Dislocated Workers Program, Canada must **reskill existing workers to equip them for the technological changes taking place** in the EV ecosystem. In particular, reskilling those that are in industries most likely to be adversely impacted by the electrification of the transportation sector such as oil & gas. For example, this type of program should target geographical areas such as Alberta and Saskatchewan, which experienced drops in new trade registrations – which are largely demand based – due to declines in resource-sector investments caused by collapses in oil & other commodity prices.<sup>33</sup> Similar to Ontario's Second Career program, such an initiative would have to be adopted and managed on a provincial level but recognized and administered across Canada. The Red Seal program is run in a similar fashion, with Employment and Social Development Canada (a federal agency) working with each of the provinces and territories to deliver the program. Typically, such a program involves funding provided by the provincial government (up to a pre-determined amount set by the government) to cover the costs of tuition, books, instructional costs, transportation, and a basic living allowance, if candidates successfully enrol in an apprenticeship or trade for an in-demand sector.<sup>34</sup>

In the medium term:

1. **Improving Canada's credential recognition approach for immigrants that are already qualified for many occupations.** According to Statistics Canada, immigrants with a university degree (bachelor's degree or higher) were twice as likely to hold roles that only required a high school diploma, relative to people born in Canada. The talent pool available should occupy roles that better align with their qualifications obtained outside of Canada. This begins with a more robust credentialing system for quicker integration into highly skilled occupations that the electrification of the transportation system demands.

In the long term:

1. **Building up the country's next generation workforce through academic, educational, and vocational training programs** that meet the needs of employers without requiring additional on the job training due to underqualification. With respect to trade and vocational institutions, like the EVITP structure, having partnerships between employers, labour unions, and educational institutions to develop curriculum and provide training in line with industry expectations to improve labour mobility. Additionally, bilateral collaboration in curriculum development to keep standards consistent across geographies for emerging technologies. To name a few, partnerships should include:
  - ii. Automakers in the EV space such as Tesla, Rivian, Fisker, and Faraday
  - iii. Canadian original equipment manufacturers (OEMs) that supply materials used to assemble EVs and are worked on during maintenance such as Linamar, and Magna International
  - iv. Labour unions from the aforementioned automakers as well as The International Brotherhood of Electrical Workers (IBEW),
  - v. Federal government innovation hubs such as the Automotive, Transportation and Digital Technologies Branch at Innovation, Science and Economic Development Canada.

Varying degrees of such collaboration have existed in the past and continue to exist today. For example, clusters of academic and commercial R&D have been used in key technologies such as alternative powertrains. Tesla Motors has an exclusive research partnership with Jeffrey Dahn for his research on lithium-ion energy density.<sup>35</sup>

## Conclusion

The transition to an electric vehicle ecosystem has the potential to greatly reduce Canada's GHG emissions and position the country as a leader in adoption of new technologies. To achieve this, Canada will need to adopt a broad set of policies addressing broad and skilled-trade-specific labour market challenges including but not limited to those provided in this work. No single policy will address all the underlying challenges, nor will all benefits be realized in the same time horizon nor implemented with the same degree of difficulty, which is why an approach that balances short-, medium-, and long-term results is required.

## Endnotes

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*The findings and opinions contained in this report reflect solely those of the author(s).*

## ABOUT THE IVEY MANAGEMENT AND POLICY FORUM

The Ivey Management and Policy Forum is an Ivey MSc student-run think tank that applies management science research and concepts to Canadian and global policy issues. Striving to get students to think critically about policy issues at the intersection of business and government, its mission is create a forum whereby students, academics, and industry leaders, come together to navigate the pressing macro-environmental problems of tomorrow. It offers students an opportunity to sharpen their policy analysis and writing abilities, at a leading Canadian business school. More information is available at <https://iveympforum.wixsite.com/website>