# A View Beyond the Horizon



*Ten Societal Megatrends Impacting Canadian Organizations, Sectors and Communities to 2030* 

A Study Prepared for the Horizontal Policy Unit of the Social Innovation and Community Development Directorate of Employment and Social Development Canada.

March 2021

Horizontal Policy Social Innovation and Community Development Directorate Employment and Social Development Canada / Government of Canada

Politiques Horizontales Innovation sociale et développement communautaire Emploi et Développement social Canada / Gouvernement du Canada

Greg Graves, Manager Horizontal Policy greg.graves@hrsdc-rhdcc.g.c.ca

hrsdc-rhdcc.gc.ca

## **Table of Contents**

MILLIN

Part 1 – Introduction	4
Overview	5
How we recommend using this report	7
Linking megatrends and the UN Sustainable Development Goals	8
How COVID-19 is addressed in this report	9
Part 2 – Megatrends	12
Megatrends	13
Methodology	16
01 Digital and data economy	19
02 The impacts of climate change	23
03 Shifting social norms and values	28
04 Future skills and work	32
05 De-carbonization	37
06 COVID-19: social inequalities	42
07 Globalization in a state of flux	46
08 Automation and the workforce	50
09 False information	55
10 Technology, sustainability and urbanization	58
Part 3 – Scenarios	63
Scenarios overview	64
Continued growth	66
Collapse	67
Discipline	68
Transform	69
Part 4 – Appendices	71
Appendix A – The remaining trends	72
Appendix B – Impact area risk and opportunity criteria	88

## Part 1 – Introduction

Overview

How we recommend using this report Linking Megatrends and UN SDGs How COVID-19 is addressed in this report

### Overview

SARS-CoV-2 (COVID-19) ushered in a new decade fraught with social and economic upheaval and uncertainty.

As the pandemic spread across the globe, it triggered shocks and shifts to social institutions, norms, and to the global economy.<sup>1</sup> Health and safety measures, restrictions, and lockdowns have uprooted almost all aspects of life. Despite the promise of vaccines, many unknowns remain and there is no "silver bullet" solution in sight.<sup>2</sup>

The timing of these global shifts is especially challenging as it coincides with the commitment of countries around the world, including Canada, to achieve the goals set out in the Agenda for Sustainable Development by 2030.<sup>3</sup> The seventeen Sustainable Development Goals (SDGs) and their targets, announced in 2015, were meant to provide a blueprint for countries to "...stimulate action over the next 15 years in areas of critical importance for humanity and the planet."<sup>4</sup> Prior to the pandemic, countries had been making progress—albeit uneven—towards the global SDGs. However, the pandemic has threatened to reverse progress on the goals.<sup>5</sup>

### The timing of these global shifts is especially challenging as it coincides with the commitment of countries around the world, including Canada, to achieve the goals set out in the Agenda for Sustainable Development by 2030.

As Canadian policymakers and business leaders prepare for the future, decisionmaking tools are needed that can help them to consider how emerging risks and opportunities associated with environmental, economic, political, and technological forces may impact their organizations, sectors, and communities. Strategic foresight methods can enable this application, especially in times of high uncertainty.<sup>6</sup> These methods can be used to identify and shape an understanding of the future, helping leaders to consider "...a variety of plausible future developments in order to identify implications for policies today."<sup>7</sup> They therefore provide an opportunity for organizations to be able to anticipate future implications, risks, and opportunities.<sup>8</sup>

Recognizing the shifting and uncertain landscape, and the need to understand the potential positive and negative impacts of emerging trends, the Horizontal Policy Unit (HPU) of the Social Innovation and Community Development Directorate<sup>9</sup> (SICDD) of Employment and Social Development Canada engaged KPMG LLP to identify ten societal megatrends and forces that may affect Canadian businesses and industries,

and impact communities between now and 2030. Identifying megatrends is an important exercise because megatrends are drivers that can influence all aspects of society, the economy, and environment. As stated in the *Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of Our Time*,<sup>10</sup> megatrends "... all result from human activity. As such they can be influenced by human decision and policies, their impacts attenuated or accentuated, their energy redirected."<sup>11</sup> Therefore understanding the interlinkages between these trends and how organizations and industry sectors both contribute to and are impacted by them is a beneficial exercise, especially as organizations and sectors seek to understand their environmental and social footprint through an Environmental, Social and Governance (ESG) lens.

### "Megatrends can be influenced by human decision and policies, their impacts attenuated or accentuated, their energy redirected." <sup>10</sup>

The ten megatrends identified in this report were selected from a broader list of thirty-five trends,<sup>12</sup> based on the views of twenty-five leaders from Canadian industries, government, academic, and non-governmental organizations. Some of these trends can be perceived as facilitators or enablers, enhancing opportunities across industries and sectors, while others are perceived as disruptive: trends that can, over time, fundamentally change the trajectory of society, entire industries, and the economy. The ten megatrends are described in **Part 2 – Megatrends** and provide context about the impacts, risks and opportunities that Canadian businesses and society could anticipate between now and 2030. The trends are also viewed through an ESG lens to establish linkages to the SDGs.

In the third part of this report, the ten megatrends are incorporated into "alternative futures"<sup>13</sup> or "generic"<sup>14</sup> scenarios, in order to develop hypothetical narratives of four completely different trajectories. These four scenarios may be used by policymakers and organizations to think about vastly different futures, helping them take the many outcomes and components of an uncertain future into consideration. These scenarios are outlined in **Part 3 – Scenarios**.

## How we recommend using this report

Policymakers and business leaders can use the ten megatrends presented in this report (as well as the remaining twenty-five trends listed in Appendix A) to better understand how these trends interact with and affect their businesses, sectors, and their communities.

## Megatrends can be used as inputs to gauge broad societal changes in foresight initiatives.

Organizations can use this report to:

- Consider how the megatrends may impact their operations from now until 2030,
- Assess the various risks and opportunities associated with the megatrends,
- Include the megatrends and scenarios as general inputs in risk management initiatives,
- Understand the organization's governance and roles in relation and response to the megatrends, and
- Identify opportunities for collaboration on the longer-term impacts of trends.

Equally, industry and trade associations can use this report to consider how the megatrends may impact their sector's (i.e. members') operations from now until 2030.

Megatrends can be used as inputs to gauge broad societal changes in foresight initiatives such as scenario planning, which is described in **Part 3**. As it is impossible to predict the future,<sup>15</sup> these trends should only be used as considerations throughout risk assessments or strategic planning processes. The insights shared in this report can be used to gain a better understanding of how different future pathways affect the UN SDGs, depending on the context of the organization and industry. Some megatrends and SDGs may be more relevant than others, and therefore organizations or associations may prioritize them to to help inform strategic action and approaches to support meeting these goals.

## Linking megatrends and the UN SDGs

As of 2020, Canada's global rank was 21 out of 166 countries, trending towards being "on track or maintaining SDG achievement" in only four of the SDG categories, 1, 3, 4, and 8.<sup>16</sup>



The only SDG achieved at this time was 4 – Quality Education.<sup>17</sup> Three SDGs including 12 – Responsible Consumption and Production, 13 – Climate Action, and 17 – Partnerships for the Goals were identified as "major challenges" with the remainder of the goals categorized as either "significant" or remaining challenges.<sup>18</sup>

In 2021, Canada published "Canada's 2030 Agenda National Strategy: Moving Forward Together" which outlined a "whole of society" vision in working toward the UN SDGs.<sup>19</sup> Within this "whole of society" approach, the report highlighted an opportunity for businesses, and the private sector more generally, to contribute to the SDGs through, "sustainable growth, quality jobs, and the well-being of employees and the communities in which they operate."<sup>20</sup> The report suggests that their contributions can be measured through commitments to ESG and initiatives such as B-Corporation certification and Carbon Disclosure Projects.<sup>21</sup>

As will be discussed in **Part 2**, the megatrends present both opportunities and risks to organizations and society, which can either support or hinder efforts toward achieving the SDGs. For example, the **digital and data economy** stands to impact numerous industries and transform businesses, potentially supporting the achievement of some SDG targets. However, at the same time, digital transformation may involve potential risks which can impact employment and further exacerbate inequalities. Similarly, climate change, if left unchanged will continue to negatively impact ecosystems, which has downstream effects on sustainability, nature/species loss, and water scarcity.

## How COVID-19 is addressed in this report

### On March 11, 2020 the World Health Organization declared that the spread of COVID-19 had reached the pandemic threshold.<sup>22</sup>

Leading up to that moment, there was mounting speculation and concern about the spread of the virus, and what that meant for health, safety, travel, the work environment, and its potential impact on society and the economy.<sup>23</sup>



Fast forward a year, and indeed, COVID-19 has disrupted many norms and social practices, and as a result, large parts of the economy. Strengths and weaknesses of Canadian institutions, government, and Canada's social fabric and economy have been highlighted, providing opportunities for Canada to change, re-position and re-build.<sup>24</sup>

The pandemic's role can be likened to a catalyst, accelerating some trends, while at the same time slowing others down, without necessarily changing the underlying nature of the trends. As a result, rather than treat the pandemic as a stand-alone trend in this report, we have chosen to consider its impact on each of the underlying trends. For example, **automation and the workforce** was already a trend prior to the

pandemic, however, the pandemic may have the effect of accelerating it.

### **References: Part 1 – Introduction**

#### Page 5

<sup>1</sup> International Labour Organization, "<u>COVID-19 and the World of Work: Updated Estimates and Analysis</u>" 7th ed (Geneva: ILO, 2021), reports that relative to the last quarter of 2019, the estimated number of working hours lost globally in 2020 was roughly four times the amount of jobs in the 2009 financial crisis, which is an "...equivalent of 255 million full-time jobs" at 1.

<sup>2</sup>World Health Organization, "<u>WHO Director-General's Opening Remarks at the Media Briefing on COVID-19</u>" (August 3, 2020).

<sup>3</sup> UN, General Assembly, Resolution Adopted by the General Assembly on 25 September 2015 "<u>Transforming our World:</u> <u>the 2030 Agenda for Sustainable Development</u>" A/RES/70/1 (October 21, 2015).

<sup>4</sup> UN, General Assembly, Resolution Adopted by the General Assembly on 25 September 2015 "<u>Transforming our World:</u> <u>the 2030 Agenda for Sustainable Development</u>" A/RES/70/1 (October 21, 2015) at 1.

<sup>5</sup> UN, Department of Economic and Social Affairs, "<u>UN/DESA Policy Brief #81: Impact of COVID-19 on SDG Progress: A</u> <u>Statistical Perspective</u>" (August 27, 2020).

<sup>6</sup> OECD, "<u>Strategic Foresight</u>" (last accessed March 15, 2021). "Foresight uses a range of methodologies, such as scanning the horizon for emerging changes, analysing megatrends and developing multiple scenarios, to reveal and discuss useful ideas about the future."

<sup>7</sup> OECD, "<u>Strategic Foresight for Better Policies: Building Effective Governance in the Face of Uncertain Futures</u>" (October 2019) at 2.

<sup>8</sup> OECD, "<u>Strategic Foresight for Better Policies: Building Effective Governance in the Face of Uncertain Futures</u>" (October 2019) at 3.

<sup>9</sup>The focus of the Income Security and Social Development Branch is "...social policy and programs designed to ensure that children, families, seniors, people with disabilities, the homeless and those at risk of homelessness, communities and others who are facing social challenges have the support, knowledge, and information they need to maintain their well-being and facilitate their participation in society" see, <u>ESDC Corporate Information</u> (last accessed March 15, 2021).

#### Page 6

<sup>10</sup> United Nations, "<u>Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of Our Time"</u> (September 2020).

<sup>11</sup> United Nations, "<u>Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of Our Time"</u> (September 2020) at 3. Note that this statement was in reference to the megatrends identified in their report – but this statement also applies to the megatrends identified in this report.

<sup>12</sup> See Appendix A for the remaining twenty-five megatrends.

<sup>13</sup> Jim Dator, "<u>Alternative Futures at the Manoa School</u>" (2009) 14:2 Journal of Futures Studies 1 – these four include continued growth, collapse, discipline and transform.

<sup>14</sup> UNDP, Global Centre for Public Service Excellence, "<u>Foresight Manual: Empowered Futures for the 2030 Agenda</u>" (Singapore: UNDP, 2018) at 37.

#### Page 7

<sup>15</sup> OECD, "Strategic Foresight" (last accessed March 15, 2021).

#### Page 8

<sup>16</sup> J Sachs et al, "<u>The Sustainable Development Goals and COVID-19. Sustainable Development Report 2020"</u> (Cambridge: Cambridge University Press, 2020) at 164.

<sup>17</sup> J Sachs et al, "<u>The Sustainable Development Goals and COVID-19. Sustainable Development Report 2020"</u> (Cambridge: Cambridge University Press, 2020) at 164.

<sup>18</sup> J Sachs et al, "<u>The Sustainable Development Goals and COVID-19. Sustainable Development Report 2020"</u> (Cambridge: Cambridge University Press, 2020) at 164.

<sup>19</sup> Sustainable Development Goals "<u>Canada's 2030 Agenda National Strategy: Moving Forward Together</u>" (Ottawa: Employment and Social Development Canada, 2021) at 8.

<sup>20</sup> Sustainable Development Goals "<u>Canada's 2030 Agenda National Strategy: Moving ForwardTogether</u>" (Ottawa: Employment and Social Development Canada, 2021) at 12.

<sup>21</sup> Sustainable Development Goals "<u>Canada's 2030 Agenda National Strategy: Moving Forward Together</u>" (Ottawa: Employment and Social Development Canada, 2021) at 12.

### Page 9

<sup>22</sup> World Health Organization, "Media Briefing on #COVID19 with @DrTedros. #coronavirus" Twitter (March 11, 2020).

<sup>23</sup> Kathleen Harris, "<u>What's Next for Canada if the WHO Calls COVID-19 a Pandemic?</u>" CBC (February 28, 2020); Leslie Young, "<u>Canada's COVID-19 Plans Could Include Closing Schools, Cancelling Events, But We're 'NotThere Yet'</u>" Global News (February 27, 2020); Cillian O'Brien, "<u>What Happens if Your Employer Tells You to Stay at Home Due to COVID-19?</u>" CTV News (March 4, 2020).

<sup>24</sup> Chief Public Health Officer, "<u>From Risk to Resilience: An Equity Approach to COVID-19</u>, (Ottawa: Public Health Agency of Canada, 2020); Carolyn A Wilkins, "<u>Exploring Life After COVID-19</u>: <u>The Far Side of the Moon</u>" Bank of Canada (November 12, 2020).

## Part 2 – Megatrends

Megatrends

Methodology

01 Digital and data Economy

02 The impacts of climate change

03 Shifting social norms and values

04 Future skills and work

05 De-carbonization

06 COVID-19: social inequalities

07 Globalization in a state of flux

08 Automation and the workforce

09 False information

10 Technology, sustainability and urbanization

### Megatrends

Megatrends can generally be defined as "...large-scale social, economic, political, environmental or technological changes that are slow to form but which, once they have taken root, exercise a profound and lasting influence on many if not most human activities, processes and perceptions."<sup>25</sup>

The ten megatrends highlighted in this report represent a mixture of technological, social, environmental, and global trends. However, all the trends have societal implications.

**Figure 1** provides an overview of the ten megatrends and the extent to which these are perceived as representing risks or opportunities in relation to five impact areas: **business and profitability**, **employment**, **health and wellbeing**, **social cohesion** and the maintenance of **resilient ecosystems** within Canada over the next decade.<sup>26</sup>



Figure 1. Megatrends – Addressing the risks while realizing the opportunities, KPMG (2021).<sup>27</sup>

When risks and opportunities are tracked exclusively against the three impact areas that are predominately "social" in nature, (i.e. employment, health and wellbeing, and social cohesion), the top five trends remain the same as shown in **Figure 1**. However, it is evident that risks become more predominant than opportunities.



Figure 2. Megatrends and "social" impact areas – employment, health and wellbeing, and social cohesion, KPMG (2021).

It is important to consider that while the trends themselves may be thematically different, megatrends are strongly interconnected. There is overlap between some aspects of trends or themes, and there can be a direct impact or correlation between them.<sup>28</sup>

### Megatrends are strongly interconnected.

**Figure 3** shows the level of interconnectivity between the ten megatrends identified, with those trends related to the **digital and data economy** and the **impact of climate change** being the most connected megatrends. The expansion of the **digital and data economy** and the associated adoption of new technologies along with the response to climate change are seen as primary drivers of both risk and opportunity over the next decade for Canadian businesses.





**Note**: The thickness of the lines indicate the volume of connections between the megatrends. The thickness of the rings illustrate the volume of total connections.

At a point when questions are being raised about the underlying purpose of 'the corporation', businesses face significant pressures to expand beyond traditional measures of success to more effectively capture environmental and social performance through enhanced ESG models. The nature of the megatrends identified in this report suggests that the strength of these ESG models will be a key determinant in whether the risks or the opportunities identified in this report will ultimately materialize over the next decade.

### Methodology

The ten megatrends described in this report were selected based on survey responses. A literature review was initially conducted on a range of reports, articles and research from academic, private sector, government, civil society and other sources.

Through this review, thirty-five trends<sup>29</sup> that could have a potentially significant and lasting societal impact on individuals, communities, societies, organizations, and industries were identified. They ranged from automation in the workforce, to species loss, and shifting social norms. Next, a five-part survey and accompanying survey guide consisting of these thirty-five trends, described in short, high-level paragraphs were developed and provided to an advisory group comprising of leaders of Canadian industries, government, and NGOs. In total, twenty-five completed surveys were received.

Through this review, thirty-five trends were identified that could have a potentially significant and lasting societal impact on individuals, communities, societies, organizations, and industries.

In the survey, respondents were first asked to select five trends in each of a number of "impact areas" comprising (i) business and profitability,<sup>30</sup> (ii) employment,<sup>31</sup> (iii) health and wellbeing,<sup>32</sup> (iv) social cohesion,<sup>33</sup> and (v) resilient ecosystems,<sup>34</sup> in order to precreate a universe of options for the subsequent questions. They were then asked to identify whether the trends they had selected for each impact area was a significant opportunity or risk, or critical risk.<sup>35</sup>

The respondents were next asked to select the top five trends that they were "most concerned about and/or present the greatest opportunities for Canadian businesses and society through to 2030" from this pre-populated universe of options, and to provide feedback on opportunities and risks. The ten megatrends were determined based on the highest number of responses. The remaining identified trends are all listed in **Appendix A**.

The megatrends listed below were further developed to describe their impact on businesses, key themes for organizational responses to them, linkages with other trends and with the key SDGs. They can be categorized into four thematic areas: environment, technology, society and globalization and include:

- **01** Digital and data economy
- **02** The impacts of climate change
- **03** Shifting social values and norms
- **04** Future skills and work
- 05 De-carbonization
- **06** COVID-19: social inequalities
- **07** Globalization in a state of flux
- **08** Automation and the workforce
- **09** False information
- **10** Technology, sustainability and urbanization

As mentioned above, megatrends are interconnected, and this is highly visible in some of the responses that have been highlighted below where participants were asked about opportunities and solutions.

### **References: Part 2 – Megatrends**

### Page 13

<sup>25</sup> OECD, "OECD Science, Technology and Innovation Outlook 2016" (Paris: OECD Publishing, 2016) at 22.

<sup>26</sup> See Appendix B for the definition of each impact area and categorization of risks and opportunities. Note that the thirtyfive trends were initially identified through a literature review.

<sup>27</sup>The risks and opportunities identified are based on the number of responses received in aggregate relating to the five impact areas.

### Page 14

<sup>28</sup> United Nations, "<u>Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of Our Time"</u> (September 2020) at 89. Report notes that "...each megatrend also affects the other megatrends, reinforcing or counteracting them, policy interventions in one area can generate positive and mutually reinforcing impacts in another" at II.

### Page 16

<sup>29</sup>Ten megatrends are described in this report, the short summary of the remaining twenty-five are in Appendix A.

<sup>30</sup> "Business and profitability" is defined as the degree to which a business has the potential to sustain and yields profit or financial gain.

<sup>31</sup> "Employment" is defined as the amount of jobs available (also considering job quality and pay) and the amount of skilled workers available.

<sup>32</sup> "Health and Wellbeing" is defined as the mental and physical health of society at large.

<sup>33</sup> "Social Cohesion and Equality" the degree of social, economic and political inclusion of all.

<sup>34</sup> "Resilient Ecosystems" is defined as the ecological quality of our natural environment (e.g. water, plants, animals, air, light, soil) and human society.

<sup>35</sup>The criteria used to define each of these categories against the impact areas is described in Appendix B.

## 01 Digital and data economy

### The collection and use of data have enabled digital transformation in ways that were unimaginable just a decade ago.

Data have become the single most important driver in the digital economy, allowing individuals and companies to glean insights into their products, consumer behaviour, health, and the environment to create data-driven solutions. Digital and data economy is the megatrend that is most connected or correlated with the remaining thirty-four megatrends. This megatrend has transformational properties and has both enabled and facilitated the development of technology and transformation across the economy and society.

It was estimated that in 2017 "[t]he nominal gross domestic product (GDP) associated with digital economic activities was \$109.7 billion, or 5.5%..." of Canada's total economic activity.<sup>36</sup> Data have enabled new industries and technologies and have enhanced existing business models. Artificial intelligence, the Internet of Things (IoT), 5G networks, and quantum computing will further transform the digital landscape. COVID-19 has accelerated digital transformation for many industries and will continue to do so for the foreseeable future.<sup>37</sup>

### This megatrend has transformational properties.





Organizations that aim to harness data and analytics can benefit from various opportunities including gaining a competitive advantage and developing insights to make informed and strategic decisions. As a facilitator of technological enablement across all industries, the **digital and data economy** clearly has an impact on business, profitability and employment (see **Figure 5**).





**Note**: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

However, it is also important for organizations to consider the risks and impacts (legal, social, and ethical) associated with the digital and data economy, including concerns about the pervasiveness of data-collection and use, relating to data governance, privacy and security.<sup>39</sup> This megatrend was negatively connected with the **cyberattacks** megatrend (**Appendix A**), as the acceleration of the digital and data economy increases the risk of such attacks from happening.

This megatrend is strongly connected with the **future skills** and **automation and the workforce** megatrends. This relationship highlights the digital and data economy's impact on the future of work and the importance of ensuring that the risks and opportunities related to the ability of the workforce to adapt to transformed industries are considered (see **Figure 6, employment** impact area).

Finally, organizations can seize opportunities in ways that can benefit people, society and the environment. While the digital and data economy was perceived to have, at most a weak perceived connection with **social cohesion and equality**, **health and wellbeing**, and **resilient ecosystems**, there are opportunities for organizations to use data and analytics to drive positive social and environmental outcomes.





**Note:** The bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.

Overall, the **digital and data economy** megatrend stands to benefit businesses and is seen as more of an opportunity than as a risk (**Figures 5, 6**). This megatrend has a broad reach across all industries and is connected to all of the other megatrends.



**Data are both an input and output for many technologies** and are a facilitator for transformation across all industries and sectors – it therefore plays an important role in achieving the SDGs.<sup>40</sup> For example, the use of data and artificial intelligence for the development of digital health can help achieve many of the targets in SDG 3.<sup>41</sup> Similarly, the use of data can benefit innovation in agri-tech, linked to vertical and sustainable farming, that can impact SDGs 2, 11, and 15.

### Key themes for organizational responses

- Ensure that the legal, ethical and social aspects of data collection and use, and the impacts of technology are considered.<sup>42</sup> Risks can be identified and assessed through tools like privacy impact assessments, standards and risks assessments related to technology.<sup>43</sup>
- Enable continuous learning initiatives, including reskilling and upskilling in order to ensure that as organizations and industries are being transformed in various ways (e.g. through digitization, artificial intelligence, automation), employees can adapt to the new landscape. Promote technical skills, digital literacy efforts and soft skills.<sup>44</sup>
- Integrate a purpose-driven tech-for-good agenda that is inclusive in its application to communities and promotes sustainable growth for society.<sup>45</sup> This could take numerous forms such as ensuring accessibility,<sup>46</sup> supporting innovation for the environment,<sup>47</sup> or collaborating with partners to help the community.<sup>48</sup>

### **References: 01 Digital and data economy**

#### Page 19

<sup>36</sup> Statistics Canada, "<u>Measuring Digital Economic Activities in Canada, 2010 to 2017</u>" Statistics Canada (May 3, 2019). United Nations, <u>"Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of Our Time"</u> (September 2020) at 124-125.

<sup>37</sup> Microsoft, "Majority of Canadian Business Leaders Feel Prepared for Future Crises like COVID-19, According to Microsoft Canada Research" Microsoft (October 28, 2020).

<sup>38</sup> "Digital Economy Gross Domestic Product as a Proportion of the Total Economy, by Province and Territory, 2017" <u>Statistics Canada</u> "Data were taken from "Measuring digital economic activities in Canada: activities in Canada: initial estimates," which is part of Latest Developments in the Canadian Economic Accounts (13-605-X), and from special tabulations."

#### Page 20

<sup>39</sup> Joy Buolamwini and Timnit Gebru, <u>"Gender Shades: Intersectional Accuracy Disparities in Commercial Gender</u> <u>Classification" (2018) 81 Proceedings of Machine Learning Research 1;</u> Teresa Scassa, <u>"Replacing Canada's 20-Year-Old</u> <u>Data Protection Law"</u> Centre for International Governance Innovation (December 23, 2020); See for example, Office of the Privacy Commissioner of Canada, <u>"Joint Investigation of Clearview AI, Inc. by the Office of the Privacy Commissioner of Canada, the Commission d'accès a l'information du Québec, the Information and Privacy Commissioner for British <u>Columbia, and the Privacy Commissioner of Alberta"</u> PIPEDA Report of Findings #2021-001 (February 2, 2021).</u>

#### Page 21

<sup>40</sup> Celine Herweijer and Dominic Kailash Nath Waughray, "<u>How Technology Can Fast-Track the Global Goals</u>" World Economic Forum (September 24, 2019). <u>"Report of the UN Economist Network for the UN 75th Anniversary: Shaping</u> <u>the Trends of Our Time"</u> (September 2020) The report suggests that "[f]irms that invest in and apply ICTs are generallyin a better position to increase productivity, competitiveness and profitability. With higher levels of digitalization in many industries (including agriculture and tourism), there is also considerable scope for digital entrepreneurs to help develop innovative digital solutions." at 124-125.

<sup>41</sup> World Health Organization, "Global Strategy on Digital Health 2020-2050" (last accessed March 15, 2021).

<sup>42</sup> See for example, Office of the Privacy Commissioner of Canada, "Joint Investigation of Clearview AI, Inc. by the Office of the Privacy Commissioner of Canada, the Commission d'accès a l'information du Québec, the Information and Privacy Commissioner for British Columbia, and the Privacy Commissioner of Alberta" PIPEDA Report of Findings #2021-001 (February 2, 2021).

<sup>43</sup> See for example, Office of the Privacy Commissioner of Canada, "<u>PIPEDA Compliance and Training Tools</u>" (last accessed March 15, 2021), CIO Strategy Council, "<u>CIO Strategy Council Launches AI Ethics Assurance Program in Collaboration with</u> <u>KPMG Canada</u>" (November 16, 2020).

<sup>44</sup> Creig Lamb and Viet Vu, "<u>Skills demand in a Digital Economy</u>" Brookfield Institute for Innovation + Entrepreneurship (December 17, 2019); Daniel Munro, "<u>Digitization and the Digital Divide: COVID-19 and Beyond</u>" Public Policy Forum (June 29, 2020).

<sup>45</sup> For example, Communitech developed a Tech for Good Declaration to ensure that respects data, future skills opportunities and inclusiveness, see Communitech, "<u>Tech for Good: A Declaration by the Canadian Tech Community</u>" Canadian Innovation Space (last accessed March 15, 2021); Josh O'Kane, "<u>Canadian Technology Firms Sign Tech for Good</u> <u>Declaration</u>" The Globe and Mail (May 31, 2018).

<sup>46</sup>Telus, "Ensuring Digital Accessibility for Everyone" Telus (last accessed March 15, 2021).

<sup>47</sup> RBC, "<u>Tech for Nature: Supporting New Ideas, Technologies, and Partnerships to Solve Pressing Environmental</u> <u>Challenges</u>" (last accessed March 15, 2021).

<sup>48</sup> William Johnson, "<u>5 Technology Projects Helping Canadians Bounce Back and stay Resilient</u>" Daily Hive (February 1, 2021).

## 02 The impacts of climate change

At the current level of global policy implementation, the average global temperature will likely increase over 3°C above pre-industrial levels by 2100, passing 1.5°C between 2030 and 2052.

An increase of 2°C is considered the limit or tipping-point, beyond which changes to climate systems and corresponding impacts are irreversible. Seemingly, small temperature changes can create a multiplier effect on various (climate) metrics including, sea level rise, temperature (average, extremes), rainfall, drought, storms and flooding, ice coverage and permafrost, as illustrated in the figure below.

#### Figure 7. What half-degree change means: impacts of 1.5°C vs 2°C (at the global level).49

	<b>1.5⁰C</b>	2ºC	2ºC Impact
<b>EXTREME HEAT</b> Global population exposed to severe heat at least once every five years	14%	37%	<b>2.6x</b> worse
<b>SEA LEVEL RISE</b> Amount of sea leavel rise by 2100	<b>0.4</b> meters	<b>0.46</b> meters	<b>0.06m</b> more
<b>SPECIES LOSS: PLANTS</b> Plants that lose at least half of their range	8%	16%	<b>2</b> x worse
<b>SPECIES LOSS: INSECTS</b> Insects that lose at least half of their range	6%	18%	<b>3</b> x worse
<b>PERMAFROST</b> Amount of Arctic permafrost that will thaw	<b>4.8</b> million km <sup>2</sup>	<b>6.6</b> million km <sup>2</sup>	<b>38%</b> worse
<b>FISHERIES</b> Decline in marine fisheries	<b>1.5</b> million tonnes	<b>3</b> million tonnes	<b>2x</b> worse

The early consequences of exponential climate volatility and disruption are already being observed. Although direct cause and effect is often approached with some hesitation, the scientific field of *extreme weather attribution* has shown that climate change may be a contributing factor to extreme weather events. For example, research suggests that "the 2017 record-breaking B.C. wildfires were made 2 to 4 times more likely" due to climate change;<sup>50</sup> "the 2018 northern hemisphere heatwave, which killed 74 people in Quebec, would have been "impossible" without climate change";<sup>51</sup> and, "1-in-100-year flood events in Toronto and Montreal are expected to become 1-in-15 year events by the end of the century as a consequence of climate change".<sup>52</sup> This comes at a cost. The Insurance Bureau of Canada (IBC) notes that 2019 was the seventh most costly year on record, with \$1.3 billion in insured damages because of rain, snow, floods, and windstorms. More generally, IBC notes an increase in the financial losses from extreme weather (events) experienced by insurance providers, homeowners, governments, and taxpayers.<sup>53</sup> Already, governments and businesses are looking for measures to enhance climate resilience.

## Research suggests that climate adaptation is estimated to cost Canadian municipalities \$5.3 billion annually.

Research suggests that climate adaptation is estimated to cost Canadian municipalities \$5.3 billion annually.<sup>54</sup> Although the impacts of climate change are primarily adverse in nature (e.g. sea level rise, extreme weather events, wildfires, health impacts) and the megatrend is seen as more of a risk than an opportunity (**Figure 8**), there can also be positive impacts. For example, canola and cereal yield could increase 10-20% in Western Canada by 2100, from extension of the growing season by 50 days and frost free season by 40 days by 2050, benefiting the agriculture sector (offset by factors including increase in precipitation extremes, annual moisture deficits and reduced nutritional content given higher CO2 levels).<sup>55</sup>



Figure 8. The Impacts of Climate Change: risk and/or opportunity?, KPMG (2021).

**Note**: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

It is important to note that climate change should not be looked at in isolation, as the effects trickle down in a variety of ways. As found in this study, the **impact of climate change** is the second most connected megatrend, meaning that it is perceived as an accelerator of many other, mostly environment-related, megatrends including **de-carbonization**, **nature/species loss** and **technology**, **sustainability and urbanization**, **water security** and **the circular economy.** For example, as businesses and society are more adversely impacted by the physical impacts of climate change, it increases the urge to avoid the rapid warming of the planet (e.g. through de-carbonization) and rethink the way we use our resources (e.g. through circularity). Similarly, as climate change persists, it will accelerate nature/

Climate change is seen as having an adverse effect on **ecosystem resiliency**, while also impacting **business and profitability** and **health and wellbeing**, and to a lesser extent **social cohesion** and equality and employment (see **Figure 9**).



Figure 9. Impact of Climate Change on Canadian businesses and society, KPMG (2021).

**Note:** The bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.



### The climate change megatrend can have a significant impact on most of the

**SDGs.**<sup>56</sup> While the connection between SDGs 6, 7, 12, 13, 14, and 15 are clear and direct, issues like poverty, hunger, and health are also impacted and linked to the impact of climate change. For example, as for poverty (in the Canadian context understood as financial hardship), extreme weather events and changing weather patterns could destroy homes, affect yields and compromise the livelihood of vulnerable populations.

## Climate change is perceived as an accelerator of many other megatrends.

### Key themes for organizational responses

- Create an understanding of organizational exposure to physical climate risks (acute and incremental) across operations, value chain and asset classes, recognizing different warming pathways (e.g. scenario analysis). Consider all relevant impact areas, such as damage to or accelerated depreciation of infrastructure/assets, impacts on yield/output, ability to deploy workforce safely (e.g. during heatwaves), year-round accessibility of operations. Use this understanding to detect vulnerable areas and inform adaptation measures. The recommendations of the Task Force on Climate-related Financial Disclosures provide a starting point for developing organizational responses.
- Consider exploring both organizational adaption measures (i.e. prevent) and emergency preparedness plans (i.e. respond) for areas subject to greatest risk. In terms of adaptation, consider physical/hardening measures (e.g. maintain clearance from tree lines, installation of water blockades for flood protection) and/or administrative measures (e.g. business interruption insurance) as see fit.

### References: 02 The impacts of climate change

#### Page 23

<sup>49</sup> Valerie Masson-Delmotte, <u>"Global Warming of 1.50C: An IPCC Special Report on The Impacts of Global Warming Of 1.5°C</u> <u>Above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context Of Strengthening</u> <u>the Global Response to the Threat Of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty</u>" Intergovernmental Panel on Climate Change (2019).

#### Page 24

<sup>50</sup> Megan C Kirchmeier-Young et al, <u>"Attribution of the Influence of Human Induced Climate Change on an Extreme Fire</u> <u>Season"</u> (2018) 7:1 Earth's Future 2. – as cited in Keri McNamara, <u>"Media Brief: The Link Between Extreme Weather and</u> <u>Climate Change" Clean Energy Canada (July 4, 2019)</u>.

<sup>51</sup> Martha M Vogel et al, "<u>Concurrent 2018 Hot Extremes Across Northern Hemisphere Due to Human Induced Climate</u> <u>Change" (2019) 7:7 Earth's Future 692.</u> – as cited in Keri McNamara, <u>"Media Brief: The Link Between Extreme Weather and</u> <u>Climate Change"</u> Clean Energy Canada (July 4, 2019).

<sup>52</sup> Ayushi Guar, Abishek Guar, Dai Yamazaki and Slobodan P Simonovic, "<u>Flooding Related Consequences of Climate Change on Canadian Cities and Flow Regulation Infrastructure</u>" (2019) 11:1 Water. – as cited in Keri McNamara, <u>"Media Brief: The Link Between Extreme Weather and Climate Change"</u> Clean Energy Canada (July 4, 2019).

<sup>53</sup> Insurance Bureau of Canada, "Severe Weather Caused 1.3 Billion in Insured Damage in 2019" IBC (January 21, 2020).

<sup>54</sup> Insurance Bureau of Canada and Federation of Canadian Municipalities, "<u>Investing in Canada's Future: The Cost of</u> <u>Climate Adaptation at the Local Level</u>" IBC and FCM (February, 2020).

<sup>55</sup> Elizabeth Bush and Donald S Lemmen, eds, "<u>Canada's Changing Climate Report"</u> (Ottawa: Government of Canada, 2019); Valerie Masson-Delmotte, Valerie <u>"Global Warming of 1.50C: An IPCC Special Report on The Impacts of Global</u> Warming Of 1.5°C Above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context Of Strengthening the Global Response to the Threat Of Climate Change, Sustainable Development, and Efforts to Eradicate <u>Poverty</u>" Intergovernmental Panel on Climate Change (2019); Insurance Bureau of Canada and Federation of Canadian Municipalities, "Investing in Canada's Future: The Cost of Climate Adaptation at the Local Level" IBC and FCM (February 2020).

### Page 25

<sup>56</sup> UN, "<u>Goal 13:Take Urgent Action to Combat Climate Change and its Impacts</u>" UN Sustainable Development (last accessed March 15, 2021).

## 03 Shifting social norms and values

Prior to COVID-19, the future economic and social landscape was thought to be widely shaped by Gen Z values and greater organizational purpose and accountability.<sup>57</sup>

While this may still be the case, COVID-19 is now the central focus as governments, organizations and individuals have collectively experienced the pandemic's social, emotional, and economic impacts.

As COVID-19 has settled in, it has become apparent that, at least in the short term, the pandemic has caused shifts in the way individuals socialize with one another (distantly), consumer expectations (ecommerce), medical and public services (digital health),<sup>58</sup> and how they spend their money.<sup>59</sup> There has also been a heightened awareness of societal inequities and interconnectedness.<sup>60</sup> The extent of the long term impacts, (i.e. whether these values and norms take root or evolve), will not be known until the trajectory of COVID-19 becomes more clear.

The **shifting social values and norms** megatrend is highly connected to the other thirty-four megatrends, as it creates a new order for how people perceive the world and inform their actions. Norms are shaped over time and through interactions – they are informal rules that help govern society.<sup>61</sup> As a result, the three trends that correlate or connect with this megatrend most closely include **COVID-19: social inequalities**, and the two most connected trends, **digital and data economy** and the **impacts of climate change**.

Figure 10. Impact of shifting social values and norms on Canadian businesses and society, KPMG (2021).



**Note**: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

This megatrend was perceived as having the most likelihood of impacts (leading to both risks and opportunities) on **social cohesion and equality** and **business and profitability** (**Figure 10**). Organizations may continue to be impacted in various ways including having to shift to adhere to expectations of new service delivery models, spending, and consuming habits.

In addition to meeting evolving product and service demands, there is also an enhanced focus on the way that organizations are navigating new social values and norms. Organizations have an opportunity to be deliberate about how they engage with and address societal issues (e.g. gender inequality, racism, and climate change).<sup>62</sup>

This megatrend also had a strong connection with accountability and social justice themed trends (**Appendix A**), indicating that social norms and values can create expectations and have the potential to impact corporate accountability, responsibility and purpose. The failure of organizations to align with these values can result in harm (e.g. reputational, and eventually, financial harms) but also impact society including vulnerable communities. This perceived risk is highlighted for **business and profitability** in **Figure 10**, demonstrating an opportunity for organizations to get in front by making this area a priority.





**Note:** The bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.

This megatrend was overall perceived as both an opportunity and a risk for Canadian businesses. Shifts in social values and norms can impact various SDGs.



### Shifts in social norms and values can create new expectations for organizations

and therefore have a broader impact on society. For example, prolonged social distancing requirements due to COVID-19, may create a shift in norms related to how we interact, consume or work, even when the restrictions are eventually fully removed. This can increase online activity, accelerate innovation, and the adoption of technology, and remove or create barriers for vulnerable populations. This might also impact climate change in a positive way, as there may be millions less people commuting to the workplace.

### Social norms and values can create expectations and have the potential to impact corporate accountability, responsibility, and purpose.

### Key themes for organizational responses

- Engage with stakeholders to understand and adapt to new expectations in service delivery. Adopt new models and pivot where possible to align with shifting consumer expectations, recognizing that different segments of society may have differing needs and expectations.
- Demonstrate a clear corporate purpose or corporate social purpose and ensure that the values that are being articulated are integrated within the organization's business model, strategy and throughout their operations<sup>63</sup> as well as more broadly through transparent reporting on progress.
- Ensure that that the organization's social commitments are aligned with internal operations. For example, when diversity and inclusion goals are developed, they should be integrated across people, processes, governance, and technology. This would encompass a review of hiring and retention practices, training and advancement opportunities for systemic biases.

### **References: 03 Shifting social norms and values**

#### Page 28

<sup>57</sup> Sally Crane, "<u>Canada 2030: The Defining Forces Disrupting Business</u>" (Ottawa: Conference Board of Canada, 2018) at 52 to 55; Tracy Francis and Fernanda Hoefel, "<u>True Gen': Generation Z and its Implications for Companies</u>" McKinsey & Company (November 12, 2018).

<sup>58</sup> Leah Rumack et al, "<u>How will COVID-19 Change Our Lives, Our Country, Our Cities and Our World</u>?" The Globe and Mail (May 16, 2020); Martin Reeves, Philipp Carlsson-Szlezak, Kevin Whitaker and Mark Abraham, "<u>Sensing and Shaping the</u> <u>Post-COVID Era</u>" Boston Consulting Group (April 3, 2020); Deloitte, "<u>COVID-19 Drastically Shifting How Canadians Shop,</u> <u>Celebrate, and Spend – Good News for Amazon</u>" Deloitte (Press Release) (October 20, 2020); Marcie Merriman, "<u>Beyond</u> <u>COVID-19 : How a Crisis Shifts Cultural and Societal Behaviors</u>" EY (April 24, 2020).

<sup>59</sup> Kristina Rogers and Andrew Cosgrove, "<u>Future Consumer Index: How COVID-19 is Changing Consumer Behaviors</u>" EY (April 16, 2020); Multiple authors, "<u>Coronavirus: Will Our Day-to-Day Ever be the Same</u>?" BBC (November 9, 2020).

<sup>60</sup> Joe Myers, "<u>5Things COVID-19 HasTaught Us About Inequality</u>" World Economic Forum (August 18, 2020).

<sup>61</sup> Cristina Bicchieri, Ryan Muldoon and Alessandro Sontuoso, "<u>Social Norms</u>", in Edward N Zalta, ed, The Stanford Encyclopedia of Philosophy (Winter 2018 Edition).

### Page 29

<sup>62</sup> See for example, Lynn S Paine, "<u>Covid-19 Is Rewriting the Rules of Corporate Governance</u>" Harvard Business Review (October 6, 2020). The author suggests that "[t]he pandemic has brought home the tight connection between business and society, and underscored the threat posed by risks stemming from large-scale societal problems that proponents of the shareholder model have traditionally regarded as outside the purview of business. The pandemic has shown that, theory aside, companies cannot so easily disconnect themselves from society-at-large."

#### Page 30

<sup>63</sup> George Serafeim, "Social-Impact Efforts That Create Real Value" Harvard Business Review (Sept-Oct 2020).

## 04 Future skills and work

Transitioning to eventual disruptive "future of work" scenarios due to artificial intelligence, automation of work, and digital platforms was already anticipated and underway.<sup>64</sup>

However, over the last year, Canadians have experienced a seismic shift in the way they work and conduct business due to COVID-19.<sup>65</sup> Social distancing requirements and the adoption of technology due to the pandemic has significantly transformed some industries (e.g. hospitality, travel), while others have gone through different types of transformation due to changes in the sector (e.g. non-digital, such as the energy industry).<sup>66</sup> The impact on employment due to all of these technological and non-technological transitions is likely why future skills and work was selected as one of the ten megatrends.

Given the changes in work and organizational needs, there is a push for reskilling or upskilling in order to succeed in this rapidly-evolving environment.<sup>67</sup> COVID-19 has further underscored the need for digital literacy skills and technological competencies, however, core adaptable diverse skillsets and traits have also emerged as critical.<sup>68</sup>

### Given the changes in work and organizational needs, there is a push for reskilling or upskilling in order to succeed in this rapidly-evolving environment.

A further component of the future skills and work is the way they are being delivered. An often cited aspect of the "future of work" is the rise of the "gig economy" which is comprised of individuals who do not engage in traditional employment (i.e. with one employer), but who may take on alternative models of flexible work with a few organizations, (i.e. "unincorporated self-employed workers").<sup>69</sup> While this term was typically associated with direct-to-consumer sharing economy platforms and delivery services, there has been a rise of companies relying on gig-workers to fill the gap in urgently needed high-skills areas where they do not exist in-house.<sup>70</sup> The importance of filling these high-skill needs is illustrated by the increased use of digital talent platforms by organizations.<sup>71</sup> There are clear risk and opportunity linkages with **employment**, and with **business and profitability** impact areas (**Figure 12**).





**Note**: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

The World Economic Foru m's *Future of Jobs Report 2020*, stated that the top five of fifteen skills highlighted by employers as important for 2025 included "(1) analytical thinking and innovation, (2) active learning and learning strategies, (3) complex problem-solving, (4) critical thinking and analysis, and (5) creativity, originality and initiative."<sup>72</sup> However, the report also indicated that skills "…in self-management such as active learning, resilience, stress tolerance and flexibility" had newly emerged this year.<sup>73</sup>

### Figure 13. World Economic Forum, "Perceived Skills and Skills Groups with Growing Demand by 2025, by Share of Companies Surveyed" (2020).<sup>74</sup>



Source Future of Jobs Survey 2020, World Economic Forum.





As organizations continue to adopt technologies there may also be new expectations that employees will have to learn technical skills that were previously not required. These include programming and coding skills as well digital literacy skills.<sup>76</sup>

Overall, the **future skills** trend is seen as more of an opportunity than as a risk. With the right structures in place, individuals can benefit from training that can help them transition.





**Note**: the bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.

Trends related to this megatrend included **social inequalities**, **technology**, **urbanization sustainability**, and **responsible innovation**, signaling that future skills are a part of a broader ecosystem, and that there is a need to contemplate the broader societal impacts of technological transformation. Notably, there is also a link between future skills and the **impacts of climate change** which can indicate the reskilling opportunities for industries that are experiencing a growth in demand (e.g. renewable power generation).



### Future skills are especially linked with SDGs related to education and innovation.

Future skills training and education could enhance opportunities to participate in technologically transformed industries.<sup>77</sup> It is also important for digital literacy and other skills to be made available to youth as they prepare for the workforce.<sup>78</sup>

### Key themes for organizational responses

- Continually examine evolving skill requisites to determine whether micro-credentialing, training, reskilling and upskilling programs are appropriate.<sup>79</sup> Ensure that programs encompass a broader scope of options that include adaptable soft skills, interpersonal skills, and entrepreneurial skills aimed at navigating the future of work, alongside technical and digital skills.<sup>80</sup>
- Develop partnerships or engage with industry associations, educational institutions, and government to understand developing industry or sectoral needs, and create a strategy to enable new programs.<sup>81</sup>

### **References: 04 Future skills and work**

#### Page 32

<sup>64</sup> Joël Blit, Samantha St Amand and Joanna Wajda, "<u>Automation and the Future of Work: Scenarios and Policy Options</u>" CIGI Paper 174, Centre for International Governance Innovation (May 29, 2018); Policy Horizons Canada, <u>Economic</u> <u>Futures: The Next Digital Economy</u> (Ottawa: Policy Horizons Canada, 2019). Government of Canada, "<u>Chairs' Summary:</u> <u>G7 Ministerial Meeting Preparing for Jobs of the Future</u>" (last accessed December 24, 2020); OECD, "<u>G7 Future of Work</u> <u>Forum</u>" Organisation for Economic Co-operation and Development (last accessed December 24, 2020).

<sup>65</sup> Pete Evans, "<u>How COVID-19 Has Changed Canada's Economy For the Worse – But Also For the Better</u>" CBC (June 23, 2020).

<sup>66</sup> For example, see Future Skills Centre, "<u>EDGE UP" Energy to Digital Growth Education and Upskilling Project</u>" (last accessed February 14, 2021).

<sup>67</sup> See for example, World Economic Forum, "<u>The Future of Jobs Report 2020</u>" (October 2020), 80% of the business leaders surveyed for the report indicated that they would be looking toward "accelerating automation of their work processes and expanding their use of remote work" at 13.

<sup>68</sup> See for example., World Economic Forum, <u>The Future of Jobs Report 2020</u>, (October 2020) at 36. However they have also identified the increasing importance of different skills such as (1) self-management, (2) active learning, (3) resilience, (4) stress tolerance, and (5) flexibility at 5.

<sup>69</sup> It was observed that between "...2005 to 2016, the percentage of gig workers in Canada generally rose from 5.5% to 8.2%." see Sung-Hee Jeon, Huju Liu and Yuri Ostrovsky "<u>Measuring the Gig Economy in Canada Using Administrative</u> <u>Data</u>" Paper No 11F0019M No 437 Statistics Canada (December 16, 2019); Ian Grundy, "<u>The Megatrend that will Shape</u> <u>Our Working Future</u>" World Economic Forum (September 8, 2018) the author suggests that "[b]y 2025, more than half of workers in the US will be freelancing, according to estimates. More than a third of millennials are already working independently in France."

<sup>70</sup> Joseph B Fuller et al, "<u>Building the On-Demand Workforce</u>" Harvard Business School and BCG Henderson Institute (November 17, 2020) at 5 and 6.

<sup>71</sup> Joseph B Fuller et al, "<u>Building the On-Demand Workforce</u>" Harvard Business School and BCG Henderson Institute (November 17, 2020) at 2.

#### Page 33

<sup>72</sup> World Economic Forum, <u>The Future of Jobs Report 2020</u>, (October 2020) at 36.

<sup>73</sup> World Economic Forum, <u>The Future of Jobs Report 2020</u>, (October 2020) at 35.

<sup>74</sup> World Economic Forum, <u>The Future of Jobs Report 2020</u>, (October 2020) at 36.

#### Page 34

<sup>75</sup> Joel Thomson and Darren Gresch, "<u>Responding to Automation:Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 13.

<sup>76</sup> Joel Thomson and Darren Gresch, "<u>Responding to Automation: Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 13.

#### Page 35

<sup>77</sup> Joel Thomson and Darren Gresch, "<u>Responding to Automation: Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 15.

<sup>78</sup> Creig Lamb and Sarah Doyle, "<u>Future Proof: Preparing Young Canadians for the Future of Work</u>" Brookfield Institute for Innovation + Entrepreneurship (March 2017).

<sup>79</sup> World Economic Forum in collaboration with Mercer, "<u>Resetting the Future of Work Agenda: Disruption and Renewal in a Post-COVID World</u>" (White Paper) (October 2020) at 12-13; Industry Strategy Council, "<u>Restart, Recover and Reimagine</u> <u>Prosperity for All Canadians: An Ambitious Growth Plan for Building A Digital, Sustainable and Innovative Economy</u>" (Ottawa: Minister of Industry, 2020) at 36-37.

<sup>80</sup> World Economic Forum, The Future of Jobs Report 2020, (October 2020) at 35.

<sup>81</sup> Industry Strategy Council, "<u>Restart, Recover and Reimagine Prosperity for All Canadians: An Ambitious Growth Plan</u> <u>for Building A Digital, Sustainable and Innovative Economy</u>" (Ottawa: Minister of Industry, 2020) at 36-37; An example of this kind of partnership: Future Skills Centre, "<u>EDGE UP</u>" <u>Energy to Digital Growth Education and Upskilling Project</u>" (last accessed February 14, 2021).
# 05 De-carbonization

The term de-carbonization refers to the notion of reducing or eliminating the release of greenhouse gases (GHG) into the atmosphere with the (long-term) goal of creating a low carbon global economy.

In this context, various pledges and commitments have been made – most notably the *Paris Agreement*,<sup>82</sup> which means to limit global warming to well below 2°C by the end of the century. More recently, the federal government tabled Bill C-12, the *Canadian Net-Zero Emissions Accountability Act*.<sup>82b</sup> Although still subject to debate, this Act sets a target for Canada to emit net-zero carbon by 2050.

In fact, the transition to a low carbon (Canadian) economy is already underway. During the period 2000 – 2008 Canada experienced a 20% reduction in the per capita indexed GHG emissions, while the indexed GHG emissions per dollar of GDP saw a 31% decline. In addition, total electricity emissions decreased by 46% during the same period "due to increased generation from natural gas and renewables, reduced generation using coal and demand management initiatives".<sup>83</sup> Today, renewable energy sources make up approximately two-thirds of Canada's electricity mix.<sup>84</sup> These figures indicate that a transition to a low carbon economy is already taking place. The question isn't if Canada will embark on the transition to a low carbon economy, the question is at what speed the continuing transition will take place. COVID-19 did not appear to impact the continuing trend of companies, including those in the oil and gas sector, announcing net zero commitments (with 2050 being a common target date) In recognition of the need to transition.





De-carbonization has far reaching consequences, and touches on many aspects of the Canadian economy (e.g. the rise of alternative proteins in agriculture, transition to renewables within the energy sector, uptick of Electric Vehicles (EVs) in the automotive sector) – presenting both risks and opportunities (see **Figure 17**).



Figure 17. De-carbonization: risk and/or opportunity?, KPMG (2021).

**Note**: the bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.

In terms of opportunities, estimates show that reducing emissions well below two degrees may require between \$78 trillion and \$130 trillion of new investment between now and 2050, globally – allowing new technologies to scale (e.g. direct air capture, conversion of waste streams, green hydrogen). Currently, clean energy accounts for 1.7% of Canada's GDP, with 81 cleantech companies featuring on the TSX and TSX-Venture exchanges with a combined market capitalization of \$50.5 billion.<sup>86</sup> On the other hand, de-carbonization presents challenges and risks particularly for those sectors with substantial investments in carbon-intensive assets. Risks can be diverse in nature, including legislative risks (e.g. exposure to rising carbon costs or a hard cap on carbon), reputational risks (e.g. stigmatization of carbon-intensive sectors), market risks (e.g. devaluation of carbon-intensive assets) and technology risks (e.g. excessive capital expenditures to allow for successful transition).<sup>87</sup>

### The fact that de-carbonization was identified as a significant opportunity for business and profitability is reflective of the fact that anticipating and preparing for a transition has become an essential element of business strategic planning.

The effects of de-carbonization are multifaceted; however, it appears to have the greatest potential risks and opportunities on **business and profitability** as well as **ecosystem resiliency** (see **Figure 18**). De-carbonization leads to opportunities to enhance **ecosystem resiliency** (as it is associated with slowing down global warming and corresponding side effects). The fact that de-carbonization was identified as a significant opportunity for **business and profitability** is reflective of the fact that anticipating and preparing for a transition has become an essential element of business strategic planning.



### Figure 18. Impact of de-carbonization on Canadian businesses and society, KPMG (2021).

**Note**: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

In addition, de-carbonization touches on many other megatrends. It does not just affect the energy sources we use; de-carbonization is a catalyst for change as it challenges the way we produce, transport and consume. De-carbonization is most strongly correlated with the **impact of climate change**, **circular economy** as well as **technology**, **sustainability and urbanization**. It plays a critical role in keeping the physical impacts of climate change in control (by slowing down global warming) and will provide a new framework for the way we plan and build our cities and our infrastructure. In addition, in defining **corporate purpose**, (see **Appendix A**), more businesses are seeking ways to contribute to the transition to a low carbon economy.



# **De-carbonization through the effect of limiting global warming is strongly connected to other environment-related SDGs** including **life on land** and **life below water**. However, as a resource intensive country, the impacts go much further. For example, what are the effects of de-carbonization on existing resource jobs that contribute to **decent work and economic growth**? Similarly, de-carbonization could be a catalyst for enhanced energy access (e.g. solar in the North vs trucked diesel), and **reduce inequalities** and contribute toward the responsible **production and**

consumption SDG.

### De-carbonization is a catalyst for change as it challenges the way we produce, transport and consume.

### Key themes for organizational responses

- Create an understanding of the exposure to the risks and opportunities associated with de-carbonization (i.e. transition risks/opportunities), possibly through scenario analysis. Use this information to stress test the existing business model and inform the organization's strategic response and corresponding mitigation measures (if any).
- Consider how a net zero trajectory would impact the business would it require incremental changes to how the business is run or would it imply a seismic shift in the business model? Depending on the organization's tolerance for change, the anticipated impacts and the level of commitment to the transition towards a low carbon economy, decide on a suitable emission reduction pathway and corresponding (science-based) targets.
- Continued investment requires that investors understand a Company's risks and opportunities through the process of decarbonization. To facilitate this understanding, consider expanding the company's disclosure on the risks and opportunities associated with decarbonization (and climate change more broadly), consistent with established reporting standards and frameworks, such as the Task Force on Climate-related Financial Disclosures (TCFD).

### **References: 05 De-carbonization**

#### Page 37

<sup>82</sup> <u>United Nations Paris Agreement, being an Annex to the Report of the Conference of the Parties on its twenty-first</u> <u>session, held in parties from 30 November to 13 December 2015</u>--Addendum Part two: Action taken by the Conference of the parties at its twenty-first session, 12 December 2015, UN Doc FCCC/CP/2015/10/Add.1, 55 ILM 740 (entered into force 4 November 2016) [Paris Agreement].

<sup>82b</sup> Bill C-12, An Act respecting transparency and accountability in Canada's efforts to achieve net-zero greenhouse gas emissions by the year 2050, 2nd Sess, 43rd Parl, 2020 (first reading, November 19, 2020).

<sup>83</sup> Natural Resources Canada (Government of Canada), <u>Energy Fact Book 2020 - 2021"</u> (Ottawa: NRCan, 2020).

<sup>84</sup> Natural Resources Canada (Government of Canada), <u>Energy Fact Book 2020 - 2021</u> (Ottawa: NRCan, 2020).

<sup>85</sup> Natural Resources Canada, "Energy and Greenhouse Gas Emissions (GHGs)" (last accessed March 14, 2021).

#### Page 38

<sup>86</sup> Natural Resources Canada (Government of Canada), <u>Energy Fact Book 2020 - 2021"</u> (Ottawa: NRCan, 2020).

<sup>87</sup>Task Force on Climate Related Financial Disclosures (TCFD), "<u>Final Report: Recommendations of the Task Force on</u> <u>Climate-Related Financial Disclosures"</u> (June 15, 2017); Bloomberg NEF, "New Energy Outlook 2020" (October 2020); Environment and Natural Resources Canada, "<u>Net-Zero Emissions by 2050</u>" Government of Canada (last accessed February 16, 2021); C Bataille et al, "<u>Pathways to Deep Decarbonization in Canada"</u> Sustainable Development Solutions Network and Institute for Sustainable Development and International Relations (2015).

# 06 COVID-19: social inequalities

One of the most striking features of the pandemic, is that it has had a disproportionate impact on different communities and spheres, exacerbating many existing inequalities. Businesses that were either able to pivot to remote working models or considered essential services were able to continue to operate, while others had to modify or shut down.<sup>88</sup>

As reported by the Industry Strategy Council, "[w]omen and youth are overrepresented in sectors such as retail and tourism that were disproportionally impacted, partially driven by the lack of telework capacity in these sectors."<sup>89</sup> Individuals who did not have access to high-speed Internet were at a disadvantage because they were unable to participate in the employment opportunities or in online classes.<sup>90</sup> Families with children (commonly women) struggled to balance health, safety, and employment with caregiving responsibilities during the lockdown.<sup>91</sup> Indigenous Peoples have experienced a disproportionate financial impact.<sup>92</sup> Individuals, either because of identity, demographic or socio-economic factors were susceptible to intensified inequalities or negative outcomes.<sup>93</sup>

# Figure 19. Statistics Canada, "COVID-19 in Canada: A Six Month Update on Social and Economic Impacts" (2020).<sup>94</sup>



Public Health Ontario reported that "[t]he most ethno-culturally diverse neighbourhoods in Ontario, primarily those concentrated in large urban areas, are experiencing disproportionately higher rates of COVID-19 and related deaths compared to neighbourhoods that are the less diverse."<sup>95</sup> The top three trends connected to **COVID-19: social inequalities** are **shifting social norms and values**, the **impacts of climate change** and **corporate purpose**. The direct connection to **shifting social values and norms** is clear, as the pandemic has put a spotlight on social inequalities. The linkage to the **corporate purpose** megatrend (see **Appendix A**) demonstrates the increasing need for organizations to align their purpose and social governance with these issues. This megatrend had the highest impact on **social cohesion and equality** followed by **health and wellbeing**.

Figure 20. Impact of COVID-19 social inequalities on Canadian businesses and society, KPMG (2021).



**Note**: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

COVID-19 has highlighted existing weaknesses and inequalities and has emphasized the need to re-evaluate the social support structures that exist for individuals and communities. While many of these impacts have been realized in the short duration of the pandemic to date, the long-term impacts can further exacerbate inequalities if appropriate forward-thinking solutions are not implemented. This is reflected in the perception that this trend, was more of a risk than an opportunity.

### Figure 21. COVID-19: social inequalities: risk and/or opportunity?, KPMG (2021).



**Note**: The bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.



**COVID-19: social inequalities are connected to all of the SDGs.** The relationship between this megatrend and the SDGs is that SDGs aim to reduce and eliminate existing societal and economic inequalities. Around the world, progress against the SDGs was uneven before the pandemic; the impact of COVID-19 has renewed calls to "...put people at the centre of the response to achieve more equitable and resilient outcomes for all."<sup>96</sup> This remains a key megatrend not just in developing countries but also within a Canadian context.

## Key themes for organizational responses

- While many of the social inequalities pre-dated COVID-19, there is an opportunity for organizations to develop a social agenda to address the current challenges being faced within their communities and look at collaboration opportunities for the purpose of developing solutions for communities and vulnerable populations.<sup>97</sup>
- Provide access to the proper support structures for employees to be able to participate in the workforce. This would include ensuring (1) access to the Internet where temporary or permanent work-fromhome policies are adopted due to COVID-19, and (2) the availability of flexible working hours (especially for individuals with caregiving responsibilities)".<sup>98</sup>
- Ensure that hiring practices, including employment algorithms, are vetted for biases to ensure inclusive hiring.<sup>99</sup> For larger organizations, this could include having a diverse hiring committee across the firm to contribute to the hiring process. In addition to oversight in hiring, equal pay, opportunities for advancement and representation should be monitored.

### **References: 06 Covid-19: Social inequalities**

#### Page 42

<sup>88</sup> Josh O'Kane, Frances Bula and Nicholas Van Praet, "<u>Hard-hit Restaurants Pushed to Brink as Second Wave of COVID-19</u> <u>Hits</u>" The Globe and Mail (November 13, 2020).

<sup>89</sup> Industry Strategy Council, "<u>Restart, Recover and Reimagine Prosperity for All Canadians: An Ambitious Growth Plan for</u> <u>Building a Digital, Sustainable and Innovative Economy</u>" (Ottawa: Industry Strategy Council, 2020) at 15.

<sup>90</sup> David Fowler, "<u>We Need to Get All Canadian Students Online Quickly in the Face of Pandemic Uncertainty</u>" CBC (Opinion) (June 2, 2020); Clark Rabbior, "<u>Connect to Compete: Enabling Entrepreneurship in the Digital Age</u>" Public Policy Forum (October 8, 2020); Justin Trudeau, "<u>Connecting all Canadians to High-Speed Internet</u>" (News Release) (November 9, 2020); Marc Frenette, Kristyn Frank and Zechuan Deng, "<u>School Closures and the Online Preparedness of Children</u> <u>During the COVID-19 Pandemic</u>" Statistics Canada 11-626-X No 103 (April 15, 2020).

<sup>91</sup> Claudia Dessanti, "<u>The She-Covery Project: Confronting the Gendered Economic Impacts of COVID-19 in Ontario</u>" Ontario Chamber of Commerce (2020).

<sup>92</sup>Tabatha Bull, "<u>How COVID-19 is Impacting Indigenous Businesses</u>" Innovating Canada (last accessed December 24, 2020); Statistics Canada, "<u>COVID-19 in Canada: A Six Month Update on Social and Economic Impacts</u>" Pub no 11-631-x Statistics Canada (September 2020) reporting that despite job losses being similar, Indigenous Peoples are "…feeling the financial impacts of COVID-19 more sharply than non-Indigenous people" at 21; Industry Strategy Council, "<u>Restart, Recover and Reimagine Prosperity for All Canadians: An Ambitious Growth Plan for Building a Digital, Sustainable and Innovative Economy</u>" (Ottawa: Industry Strategy Council, 2020) at 35.

<sup>93</sup> Alastair J Flint, Kathleen S Bingham and Andrea Iaboni, "Effect of COVID-19 on the Mental Health Care of Older People in Canada" International Psychogeriatrics (Commentary) (April 24, 2020); Neil Price and Emis Akbari, "Canada's Woeful Track Record on Children Set to Get Worse with COVID-19 Pandemic" The Conversation (October 19, 2020).

<sup>94</sup> Statistics Canada, "<u>COVID-19 in Canada: A Six Month Update on Social and Economic Impacts</u>" Pub no 11-631-x Statistics Canada (September 2020) at 21.

#### Page 43

<sup>95</sup> Ontario Agency for Health Protection and Promotion (Public Health Ontario), "<u>Enhanced Epidemiological Summary:</u> <u>COVID-19 in Ontario - A Focus on Diversity"</u> (June 1, 2020) at 1; Olivia Bowden and Patrick Cain, "<u>Black Neighbourhoods</u> <u>in Toronto Are Hit Hardest by COVID-19 – and It's 'Anchored in Racism': Experts</u>" Global News (June 2, 2020).

#### Page 44

<sup>96</sup> United Nations Department of Economic and Social Affairs, "<u>UN/DESA Policy Brief #81: Impact of COVID-19 on</u> <u>Progress: A Statistical Perspective</u>" (August 27, 2020).

<sup>97</sup> Examples of Canadian startups that have mobilized to assist communities, see Barry Chang, "<u>Amazing Ways Canadian</u> <u>Startups are Tackling the COVID-19 Crisis</u>" MaRS (June 24, 2020).

<sup>98</sup>The Economist Intelligence Unit, "<u>The Future of Work and Digital Wellbeing: Protecting Employees in a COVID-19-</u> <u>Shaped World</u>" The Economist (October 2020) at 24-26.

<sup>99</sup> Manish Raghavan and Solon Barocas, "<u>Challenges for Mitigating Bias in Algorithmic Hiring</u>" The Brookings Institution (December 6, 2019); Kyle Wiggers, "<u>Researchers Find That Even 'Fair' Hiring Algorithms Can be Biased</u>" VentureBeat (December 4, 2020) citing Tom Sühr, Sophie Hilgard and Himabindu Lakkaraju, "<u>Does Fair Ranking Improve Minority</u> <u>Outcomes? Understanding the Interplay of Human and Algorithmic Biases in Online Hiring</u>" arxiv (December 2020).

# 07 Globalization in a state of flux

There are various facets of globalization, including "trade", "capital", "information", and "people."<sup>100</sup> While aspects of globalization had been in a state of flux or weakening prior to COVID-19.101 the pandemic has caused a shift, at least in the short term, due to health and safety restrictions (e.g. social distancing requirements).<sup>102</sup>

Global Value Chains (GVCs) were disrupted due to lockdown measures around the world. These measures also impacted the trade of Canadian goods. The Office of the Chief Economist reported that reported that the trade of Canadian goods decreased by 3.5% in the first quarter of 2020 due to a 1.2% decrease in imports and a 5.7% decrease in exports.<sup>103</sup> Some sectors such as automobile, electronics and energy were highly affected.

Figure 22. Office of the Chief Economist "Canada's State of Trade: The Early Impacts of COVID-19 on Trade" (2020).<sup>104</sup>



TOP TRADING SECTORS MOST

A recent study revealed that 93% of supply chain executives indicated that they intended on increasing their resiliency and mitigation strategies because of COVID-19.105 The strategies identified included supplier diversification, increasing critical inventory and nearshoring and expanding supplier base.

International travel has been dramatically impacted with restrictions on non-essential travel and increased measures.<sup>106</sup> These restrictions have caused a significant impact on the tourism industry and the economy more generally<sup>107</sup> with particularly negative impacts

for the aviation industry and related sectors. Air transportation plays a key role in globalization, for the movement of people, goods and knowledge.<sup>108</sup> Despite these impacts, some suggest that globalization will go through a period of transition rather than continue to decline.<sup>109</sup>

Globalization in a state of flux has a mostly negative connection with the impacts of climate change megatrend. This is likely because of the perceived environmental impact and costs of globalization, as a result of increased manufacturing and transportation GHG emissions.<sup>110</sup> There is also an important connection between

this trend and the **digital and data economy** – both positive and negative – which may suggest that technology is being adopted in the manufacturing sector, which can enable companies to re-shore because of the reduction in labour costs. These connections were also aligned with the perception that this trend was mostly a risk to **business and profitability**, and to **social cohesion and equality** (**Figure 23**).

Figure 23. Impact of globalization in a state of flux on Canadian businesses and society, KPMG (2021).



**Note**: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.



### Figure 24. Globalization in a state of flux: risk and/or opportunity?, KPMG (2021).

**Note**: The bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.

This trend was perceived as more of a risk than as an opportunity by the respondents who selected it.



**Globalization can impact SDGs in several ways (e.g. innovation and economic growth associated with advances in manufacturing).** There are also potential impacts, for instance, related to the travel industry and GVCs, underscoring the need for sustainable production and consumption and sustainable tourism.

## Key themes for organizational responses

- Identify gaps and risks in existing value chains and explore strategies to become resilient by engaging in supplier and customer diversification (both national and regional), increasing critical inventory and nearshoring.<sup>111</sup>
- Develop strong relationships and engage with international trade partners. In 2019, it was reported that the United States, European Union and China were Canada's top three trading relationships.<sup>112</sup> Despite the strength of these relationships, there are opportunities to grow and to expand to new emerging markets.<sup>113</sup>

### **References: 07 Globalization in a state of flux**

#### Page 46

<sup>100</sup> DHL, "DHL Global Connectedness Index 2020 Signals Recovery of Globalization from COVID-19 Setback" (December 3, 2020) cited in Gillian Tett, "Reports of Globalisation's Death Are Greatly Exaggerated" Financial Times (December 3, 2020). The DHL measured "trade" as both goods and services trade (p 28-31); "capital" as "measures stocks and flows of foreign direct investment (FDI) and portfolio equity investment" (p 32-25); "information" as " data covering telephone calls (including calls over the internet), international co-authorship of scientific research, and trade in printed publications" (p 36-40); and, "people" as tourism and student mobility, and migration (p 41-44).

<sup>101</sup> OECD, "COVID-19 and Global Value Chains: Policy Options to Build More Resilient Production Networks" Organisation for Economic Co-operation and Development (June 3, 2020) at 2.

<sup>102</sup> Paul Wells, "<u>Can the Forces of Globalization Ever Hope to Outlast the Coronavirus</u>" MacLean's (April 6, 2020); Office of the Chief Economist, "<u>Canada's State of Trade: The Early Impacts of COVID-19 on Trade</u>" (Ottawa: Global Affairs Canada, 2020).

<sup>103</sup> Office of the Chief Economist, "<u>Canada's State of Trade: The Early Impacts of COVID-19 on Trade</u>" (Ottawa: Global Affairs Canada, 2020) at 32.

<sup>104</sup> Office of the Chief Economist, "<u>Canada's State of Trade: The Early Impacts of COVID-19 on Trade</u>" (Ottawa: Global Affairs Canada, 2020) at 32.

<sup>105</sup> Susan Lund et al, "<u>Risk, Resilience and Rebalancing in Global Value Chains"</u> McKinsey Global Institute (August 6, 2020) at 17 and 80. Note that 60 supply chain executives were interviewed in May 2020.

<sup>106</sup> See for example, additional restrictions: Transport Canada, "<u>Government of Canada Introduces Further Restrictions on</u> <u>International Travel</u>" Government of Canada (January 29, 2021).

<sup>107</sup> Huju Liu, "<u>The Economic Impact of Travel Restrictions on the Canadian Economy Due to the COVID-19 Pandemic</u>" Statistics Canada Report 11-626-X No 125 (October 23, 2020); Kevin Lynch and Paul Deegan, "<u>Five Lasting Implications of COVID-19 for Canada and the World</u>" The Globe and Mail (April 1, 2020).

<sup>108</sup> OECD, "<u>COVID-19 and the Aviation Industry: Impact and Policy Responses</u>" (Paris: OECD, 2020) at 2.

<sup>109</sup> Gillian Tett, "<u>Reports of Globalisation's Death Are Greatly Exaggerated</u>" Financial Times (December 3, 2020).

<sup>110</sup> Jean-Yves Huwart and Loïc Verdier, "<u>Economic Globalisation: Origins and Consequences"</u> (Paris: OECD Publishing, 2013) at 112.

#### Page 48

<sup>111</sup> See for example, resilience strategies in Susan Lund et al, "<u>Risk, Resilience and Rebalancing in Global Value Chains"</u> McKinsey Global Institute (August 6, 2020) at 17 and 80. Note that 60 supply chain executives were interviewed in May 2020.

<sup>112</sup> Office of the Chief Economist, "<u>Canada's State of Trade: The Early Impacts of COVID-19 on Trade</u>" (Ottawa: Global Affairs Canada, 2020) at 15.

<sup>113</sup> Despite these relationships, Canadian exporters and importers seem to not be taking advantage of the Comprehensive Economic and Trade Agreement (CETA), see Office of the Chief Economist, "<u>Canada's State of Trade: The Early Impacts of</u> <u>COVID-19 on Trade</u>" (Ottawa: Global Affairs Canada, 2020) at 15.

# 08 Automation and the workforce

Companies have had to consider ways to reduce risk of exposure and increase resilience due to COVID-19. In doing so, many organizations may consider adopting automation in their operations in order to reduce disruptions due to health and safety measures.<sup>114</sup>

The World Economic Forum's *Future of Jobs Report 2020* reported that of the business leaders they surveyed, roughly 80% were "...accelerating the automation of their work processes and expanding their use of remote work. A significant 50% also indicated that they are set to accelerate the automation of jobs in their companies."<sup>115</sup>

Perceived as a disruptor, **automation in the workforce** is facilitated by and connected to the **data and digital economy** and **artificial intelligence** (**Appendix A**). In the same way that the digital and data economy and artificial intelligence can apply to a broad range of industries, so can automation. Automation will provide opportunities for organizations to gain a competitive advantage.<sup>116</sup> It can also help companies relieve people from mundane repetitive tasks, which can help to reallocate resources to more impactful areas. This trend was perceived as an overall opportunity for the **business and profitability** impact area (**Figure 25**).



Figure 25. Impact of automation in the workforce on Canadian businesses and society, KPMG (2021).

Note: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

However, this advantage comes with possible risks. This trend was perceived to be predominantly a critical risk for the **employment** impact area (**Figure 26**). The OECD published a report outlining jobs at risk due to automation in Canada, estimating that, relative to total employment in 2018, 15% of jobs were at "high risk," whereas roughly 30% of jobs were anticipated to experience "significant change."<sup>117</sup> Notably, the rate of automation can differ based on economic region,<sup>118</sup> and the risk

of job transformation depends on the type of work, sector, demographic, skills and education.<sup>119</sup> This is aligned with the third most connected trend, **future skills**, which was considered to be both an opportunity and a risk.

### Figure 26. Automation in the work force: risk and/or opportunity?, KPMG (2021).



**Note:** The bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.

As mentioned in the earlier megatrends, there will likely be an impact on the labour market in some sectors, and therefore there is an opportunity for reskilling and training people to be able to adapt and transition within key impacted industries. If job displacement is not mitigated, automation has the potential to contribute to increased inequalities across various industries and regions.

### If job displacement is not mitigated, automation has the potential to contribute to increased inequalities across various industries and regions.

Figure 27. The Conference Board of Canada "Responding to Automation: Technology Adoption in Canadian Industries (2021). <sup>120</sup>



Many Canadian companies are already using or planning to use automation enabling technologies.<sup>121</sup> It has been suggested that automation does not automatically equate to jobs loss, rather, jobs will be transformed,<sup>122</sup> highlighting the importance of reskilling and upskilling opportunities for existing workers to take on changing roles. Automation will also likely create new jobs and emphasize the need for technical, soft and transferable skills.<sup>123</sup> Furthermore, some industries may have tasks that will be more susceptible than others to automation.<sup>124</sup>



Automation is a disruptor and will have both a positive and negative impact across industries (e.g. healthcare, agriculture). As mentioned above, automation can help companies drive efficiencies and relieve people of repetitive tasks. On the other hand, it can displace roles and impact communities, which if not mitigated properly through training and new job creation, can result in risks for individuals and communities. If automation is planned with the transition of workers in mind, many industries will stand to benefit without significant displacement, (e.g. healthcare and agriculture, directly impacting SDGs 2 and 3, while also contributing to SDG 8, 9 and 11).

### Key themes for organizational responses

- Adopt technology in a strategic and planned manner rather than in a "reactive" manner in order to fully realize the benefits of automation, and to not fall behind competitors.<sup>125</sup> As Canadians are said to be slower adopters of technology (both firms and consumers), automation should be adopted with the long view in mind.<sup>126</sup>
- Understand the trends and identify the specific jobs, task or skills that may be affected by automation and provide proper training opportunities before transformation takes place within the organization or throughout the industry.<sup>127</sup> Where jobs are displaced, rather than transformed, employers could enable opportunities for employees to upskill so that they could remain available for alternative kinds of work.<sup>128</sup>

### **References: 08 Automation and the workforce**

### Page 50

<sup>114</sup> OECD, "<u>Preparing for the Future of Work in Canada</u>" (Paris: OECD, 2020) at 13.

<sup>115</sup>World Economic Forum, "<u>The Future of Jobs Report 2020</u>" (October 2020) at 13.

<sup>116</sup> Sean Mullin and Creig Lamb, "<u>Automation Presents a Dual Challenge for Canada – We Must take Advantage of it while</u> <u>Protecting Those Most Hurt</u>" The Globe and Mail (July 8, 2018).

<sup>117</sup> OECD, "Preparing for the Future of Work in Canada" (Paris: OECD, 2020) at 26 – this was prior to COVID-19.

### Page 51

<sup>118</sup> OECD, "Preparing for the Future of Work in Canada" (Paris: OECD, 2020) at 26.

<sup>119</sup> Lower skilled workers are at a higher risk, OECD, "<u>Preparing for the Future of Work in Canada</u>" (Paris: OECD, 2020) at 20; see also Marc Frenette and Kristyn Frank, "<u>Automation and JobTransformation in Canada: Who's at Risk?</u>" Statistics Canada 11F009M No 448 (June 29, 2020).

<sup>120</sup> Joel Thomson and Darren Gresch, "<u>Responding to Automation:Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 6.

<sup>121</sup> Joel Thomson and Darren Gresch, "<u>Responding to Automation: Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 6.

<sup>122</sup> Marc Frenette, Kristyn Frank and Zechuan Deng, "<u>School Closures and the Online Preparedness of Children During the</u> <u>COVID-19 Pandemic</u>" Statistics Canada 11-626-X No 103 (April 15, 2020).

<sup>123</sup> Creig Lamb, "Automation, Accelerated: Will Technology Adoption Amidst a Pandemic Leave Canada Further Behind?" Brookfield Institute for Innovation + Entrepreneurship (May 14, 2020); Joel Thomson and Darren Gresch, "<u>Responding to</u> <u>Automation: Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 13.

<sup>124</sup> Joel Blit, "<u>Automation and Reallocation: Will COVID-19 Usher in the Future of Work?</u>" (August 2020) Canadian Public Policy S192 at S197. The author identified the industries that may increasingly be motivated to automate due to COVID-19, based on the measures of physical "proximity" required to others, and "routineness" of the task itself, suggested that retail, manufacturing, and transportation were the most likely to transform.

### Page 52

<sup>125</sup> Joel Thomson and Darren Gresch, "<u>Responding to Automation: Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 14; Creig Lamb, "<u>Automation, Accelerated: Will Technology Adoption</u> <u>Amidst a Pandemic Leave Canada Further Behind?</u>" Brookfield Institute for Innovation + Entrepreneurship (May 14, 2020).

<sup>126</sup> Joel Thomson and Darren Gresch, "<u>Responding to Automation: Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 14; Creig Lamb, "<u>Automation, Accelerated: WillTechnology Adoption</u> <u>Amidst a Pandemic Leave Canada Further Behind?</u>" Brookfield Institute for Innovation + Entrepreneurship (May 14, 2020).

<sup>127</sup> Leah Birnbaum and Janet Farrow, "<u>The Impact of Technological Change on Ontario's Workforce: RobotTalks Final</u> <u>Engagement Summary</u>" Brookfield Institute (March 2018).

<sup>128</sup> Joel Thomson and Darren Gresch, "<u>Responding to Automation: Technology Adoption in Canadian Industries</u>" The Conference Board of Canada (January 28, 2021) at 16.

# 09 False information

The proliferation of false information – both intentional (i.e. disinformation, "[i]nformation that is false and deliberately created to harm a person, social group, organization or country") and non-intentional, (i.e. misinformation, "[i]nformation that is false but not created with the intention of causing harm")<sup>129</sup> – has gained momentum and can pose risks to individual and societal security.<sup>130</sup>

The effects of false information have been documented in a number of contexts including "political security"<sup>131</sup> (e.g. elections, resulting in attacks on democratic institutions), and in the context of physical security (e.g. COVID-19 related information), which can create challenges for health authorities trying to battle the spread of the pandemic.<sup>132</sup>

Businesses can also face direct harm due to false information. Corporations around the world have been affected by hoax attacks or rumours resulting in drops in share prices or reputational impact and are increasingly becoming wary of having their products or services targeted.<sup>133</sup>

The spread of false information is expected to continue to become more widespread,<sup>134</sup> especially as technologies such as artificial intelligence may be used to engineer and automate its production.<sup>135</sup> While there is a direct connection with the **digital and data economy**, this connection is perceived as negative, likely because of the role of the **digital and data economy** in the dissemination of false information through social and other media outlets. While the spreading of false information has occurred for centuries, the sheer reach and speed of social media has increased its potential for negative impacts.





**Note:** The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

This trend was primarily perceived as a risk to **social cohesion** and **health and wellbeing** impact areas (**Figure 29**) as a result of its negative impact on society, the economy, and people. The second most connected trend to false information is **shifting social norms and values**, which is also negatively correlated. This connection suggests that false information can negatively contribute to diverging values and norms of different groups, and that diverging values and norms are also contributing to false information.

### False information can be spread about digital health technology or life saving medications which could ultimately reduce adoption by patients.



Figure 29. Automation in the work force: risk and/or opportunity?, KPMG (2021).

**Note**: The bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.

Overall, this megatrend was perceived as only a risk by the respondents who selected it as a top five trend.



# The primary impact of false information on the SDGs is that it can undermine support for efforts to improve social, economic, and environmental outcomes.

For example, false information can be spread about digital health technology or life saving medications which could ultimately reduce adoption by patients. Democratic institutions and communities can also be at risk if trust is eroded online.

### Businesses can also face direct harm due to false information.

### Key themes for organizational responses

- Create clear and direct channels of communication with consumers and the public through official accounts for the public to be able to access an accurate source of information.
- Prepare a plan to respond to false information in a timely and adequate manner.<sup>136</sup> Preparation in advance of an incident will enable a coherent approach and help mitigate reputational loss due to lost time.
- Train employees and communities about false information and create clear guidelines for reporting inaccuracies that might appear online. Enabling employees and the public to detect false information will also help them identify the issues and prevent them from buying into it.<sup>137</sup>

### **References: 09 False information**

#### Page 54

<sup>129</sup> UNESCO, "Journalism, 'Fake News' and Disinformation: A Handbook for Journalism Education and Training" (last accessed February 16, 2021).

<sup>130</sup> CIGI-Ipsos, "2019 CIGI-Ipsos Global Survey on Internet Security and Trust" Centre for International Governance Innovation (2019); Canadian Internet Registration Authority (CIRA), "<u>Canadians Deserve a Better Internet</u>" (February 19, 2020); Miles Brundage et al, "<u>The Malicious Use of Artificial Intelligence: Forecasting, Prevention, and Mitigation</u>" (February 2018) at 44-46.

<sup>131</sup> Miles Brundage et al, "<u>The Malicious Use of Artificial Intelligence: Forecasting, Prevention, and Mitigation"</u> (February 2018) at 44-46; See for example, Yochai Benkler et al, "<u>Mail-In Voter Fraud: Anatomy of a Disinformation Campaign</u>" Research Publication No 2020-6, Berkman Klein Center for Internal & Society at Harvard University (October 2, 2020); Ronald Orol, "<u>Fake News Threatens Canada's Federal Election</u>" Centre for International Governance Innovation (March 13, 2019).

<sup>132</sup> Mia Rabson, "<u>Fake News Creating Problems for Battling COVID-19 Pandemic, Canada's Chief Public Health Doctor</u> <u>Says</u>" The Globe and Mail (October 20, 2020); Jon-Patrick Allem, "<u>Social Media Fuels Wave of Coronavirus Misinformation</u> <u>as Users Focus on Popularity, Not Accuracy</u>" The Conversation (April 6, 2020).

<sup>133</sup> Caroline Binham, "<u>Companies Fear Rise of Fake News and Social Media Rumours</u>" Financial Times (September 29, 2019); Hannah Kuchler, "<u>Companies Scramble to Combat 'Fake News</u>'" Financial Times (August 22, 2017); Robert McMillan, "Brands Face a New Online Threat: Disinformation Attacks" Wall Street Journal (October 8, 2020).

<sup>134</sup> EY, "Are You Reframing Your Future or Is the Future Reframing You: Understanding Megatrends Will Help You See <u>Opportunities Where Others Don't</u>" 3rd ed, EYQ 3rd edition (June 2020).

<sup>135</sup> Miles Brundage et al, "<u>The Malicious Use of Artificial Intelligence: Forecasting, Prevention, and Mitigation"</u> (February 2018) at 46.

### Page 56

<sup>136</sup> Aviv Ovadya and Hal Bienstock, "<u>Is Your Company Ready to Protect Its Reputation from Deep Fakes?</u>" Harvard Business Review (November 8, 2018); Lisa Kaplan, "<u>Disinformation Attacks are Spreading. Here are 4 Keys to Protecting Your</u> <u>Company</u>" Fortune (March 8, 2021).

<sup>137</sup> Lisa Kaplan, "Disinformation Attacks are Spreading. Here are 4 Keys to Protecting Your Company" Fortune (March 8, 2021).

# 10 Technology, sustainability and urbanization

# Intelligent (or smart) cities, infrastructure and mobility all rely on the interconnectivity of devices, sensors, and data.<sup>138</sup>

Intelligent cities can create opportunities to enhance access to public services, promote inclusive growth and sustainability, and create efficiencies in the way cities operate.<sup>139</sup> It has been reported that "...cities account for 70 percent of the world's greenhouse gas (GHG) emissions."<sup>140</sup> Cities can work toward sustainability by using data and technologies to mitigate traffic flows, integrate intelligent mobility solutions, "smart grids," green roofs and vertical farms.<sup>141</sup> These can in turn help reduce pollution and emissions.

This megatrend was perceived as an opportunity across all five of the impact areas. This megatrend was also perceived as both a risk and an opportunity for **resilient ecosystems** (**Figure 30**) reflecting the role of cities as primary drivers of emissions and waste and the opportunities for "significant improvements in environmental protection, restoring ecosystems and improving the quality of life in many areas."<sup>142</sup>

Figure 30. Impact of technology, sustainability and urbanization on Canadian businesses and society, KPMG (2021).



**Note**: The size of the bubble is meant to be an indicator for the 'likelihood of impact' – a relative larger bubble indicates that more survey respondents believe that the megatrend presents a risk and/or opportunity to the impact category.

This megatrend has the highest connection with the **impacts of climate change** and the **digital and data economy**. As mentioned above, there are opportunities for sustainable cities to greatly reduce the impact of GHG emissions through innovative solutions, and therefore this megatrend can either positively (i.e. reduce GHG emissions and pollution) if successful, or negatively (i.e. increase GHG emissions and pollution), contribute to climate change if not. Technology is required to develop these intelligent solutions, (e.g. IoT and sensors all of which generate and require data) – and therefore, the **digital and data economy** plays a critical role. **De-carbonization** and the **circular economy** also play an important role in enabling the benefits of this megatrend to be realized.

Cities can also enhance public service delivery and promote civic participation.<sup>143</sup> They can provide an opportunity to develop circular economy<sup>144</sup> and quality of life initiatives such as the 15-minute city initiative.<sup>145</sup> IoT, sensors and cameras can read, monitor and measure outputs across operations to help dispatch and deploy services based on real-time information, reducing waste and promoting efficiency.<sup>146</sup>

# In Canada, initiatives exploring smart cities at the municipal and federal levels have already been launched.

Cities around the world such as Amsterdam, Barcelona, and Singapore provide examples of how technology has been used to help serve communities. In Canada, initiatives exploring smart cities at the municipal and federal levels have already been launched.<sup>147</sup> Toronto is also a member of the G20 Global Smart Cities Alliance.<sup>148</sup> Given that Canada's population is concentrated in urban regions,<sup>149</sup> the intersection of technology, sustainability and urbanization will continue to grow.

Technology and digitalization will also provide opportunities for cities to reset following COVID-19, and help communities and businesses reconnect and rebuild in an inclusive and sustainable way.<sup>150</sup> In order to effectively build smart cities and achieve stakeholder buy-in, concerns about smart city governance on key issues including data, privacy, surveillance, responsible innovation as well as vendor lock-in will have to be addressed.<sup>151</sup>

Despite the perception that this megatrend is a perceived risk for **resilient ecosystems**, for the share of respondents who finally selected this as a top five megatrend, it was exclusively considered to be an opportunity (**Figure 31**).





**Note**: The bar chart indicates the relative amount of survey respondents that believe that the megatrend presents a risk and/or opportunity to Canadian businesses.



**This megatrend has a strong connection with all of the SDGs.** As mentioned above, sustainable cities can help improve the environmental-related SDGs such as 6, 11, 12, 13, 14 and 15. Smart cities can also enable greater civic discourse and participation in municipal initiatives, and can impact health, welfare, poverty and hunger.

# Key themes for organizational responses

- Consider the main policy issues related to private-public partnerships, including those that are related to data governance.<sup>152</sup> There are multiple challenges that can hinder cities and private sector actors from benefiting from opportunities for innovative and sustainable solutions.<sup>153</sup>
- Engage with all stakeholders especially citizens in order to understand their concerns and challenges.<sup>154</sup> Citizen-centric engagement will allow organizations to understand the problems and challenges before integrating technology to solution them. Use technology as a means to an end – to solve relevant problems.<sup>155</sup>
- Integrate concepts from the 15-minute city model<sup>156</sup> as a sustainable, community-building measure. Organizations can develop innovative solutions to promote access to everyday needs such as groceries, pharmacies, and doctors, "a variety of housing types" including affordable housing, enabling alternative mobility (i.e. walking and biking) opportunities, and public spaces.<sup>157</sup>

### References: 10 Technology, sustainability & urbanization

#### Page 58

<sup>138</sup> Amsterdam Economic Board, <u>Amsterdam Smart City</u> (last accessed November 24, 2020); Barcelona, <u>Smart City</u> (last accessed November 24, 2020); OECD, "<u>Smart Cities and Inclusive Growth: Building on the Outcomes of the 1st OECD</u> <u>Roundtable on Smart Cities and Inclusive Growth</u>" (Paris: OECD, 2020).

<sup>139</sup> United Nations, "<u>Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of Our Time"</u> (September 2020) at 89 and 114-115.

<sup>140</sup> World Bank Group, United Nations Development Programme and Global Infrastructure Facility Report, "<u>Catalyzing</u> <u>Private Sector Investment in Climate Smart Cities</u>" (2020) at 4.

<sup>141</sup> See for example, United Nations, "<u>Report of the UN Economist Network for the UN 75th Anniversary: Shaping the</u> <u>Trends of OurTime"</u> (September 2020) at 12; Sameh Wahba, "<u>Here's How Technology is Tackling Inclusion Issues in Smart</u> <u>Cities</u>" World Economic Forum (February 14, 2020); John Lorinc, "<u>How Can We Be Assured Smart City Tech Will do More</u> <u>Good Than Harm? It All Comes Does to Governance</u>" The Toronto Star (January 14, 2021).

<sup>142</sup> See definition in Appendix B.

#### Page 59

<sup>143</sup> OECD, "Smart Cities and Inclusive Growth: Building on the Outcomes of the 1st OECD Roundtable on Smart Cities and Inclusive Growth" (Paris: OECD, 2020) at 19-20.

<sup>144</sup> See, Vickey Simovic, "<u>Canadian Smart Cities: A Case for the Circular Economy in the Age of "Smart" Innovation"</u> Future Cities Community Solutions Research (December 2019).

<sup>145</sup> Eric Woods, "The 15-Minute City Can Also Be a Smart City" Guidehouse Insights (August 4, 2020).

<sup>146</sup> John Lorinc, "<u>How Exactly Are Smart Cities Built? From Facial Recognition and 5G Networks to Cheap Sensors – These</u> <u>are Essential Components</u>" The Toronto Star (January 5, 2021).

<sup>147</sup> See for example, Waterfront Toronto, "<u>Intelligent Communities</u>" (last accessed December 4, 2020); Infrastructure Canada, "<u>Smart Cities Challenge</u>" (last accessed November 21, 2020).

<sup>148</sup> G20 Global Smart Cities Alliance, <u>"Pioneer Programme"</u> (last accessed February 16, 2021).

<sup>149</sup> In Canada, roughly 26.5 million people living in census metropolitan areas (CMA), see Statistics Canada "<u>Canada's</u> <u>Population Estimates: Subprovincial Areas, July 1, 2018</u>" The Daily (March 28, 2019); A CMA is defined as having "...a population of at least 100,000 of which 50,000 or more live in the core" see Statistics Canada, "<u>Census Metropolitan Area</u> (<u>CMA</u>) and <u>Census Agglomeration (CA</u>)."

<sup>150</sup> OECD, Tackling Coronavirus (COVID-19) Contributing to a Global Effort, "<u>Cities Policy Responses</u>" (updated July 23, 2020) at 34-35; Jane Wakefield, "<u>Coronavirus: How Can We Make Post-Pandemic Cities Smarter?</u>" BBC News (July 11, 2020).

<sup>151</sup>Teresa Scassa, "<u>Designing Data Governance for Data Sharing: Lessons from SidewalkToronto</u>" (2020)Technology and Regulation 44; James McLeod, "<u>Digital Experts Raise Data, Privacy Concerns in Review of Sidewalk Labs Project</u>" Financial Post (September 10, 2019); OECD, "<u>Smart Cities and Inclusive Growth: Building on the Outcomes of the 1st</u> <u>OECD Roundtable on Smart Cities and Inclusive Growth</u>" (Paris: OECD, 2020). <u>G20 Global Smart Cities Alliance</u>.

#### Page 60

<sup>152</sup>The G20 Global Smart Cities Alliance, "<u>Global Policy Roadmap</u>" has developed a policy roadmap to help cities "... identify model policies for successful, ethical smart cities" (last accessed march 15, 2021);Teresa Scassa, "<u>Designing Data</u> <u>Governance for Data Sharing: Lessons from Sidewalk Toronto</u>" (2020)Technology and Regulation 44.

<sup>153</sup>Teresa Scassa, "<u>Designing Data Governance for Data Sharing: Lessons from SidewalkToronto</u>" (2020) Technology and Regulation 44.

<sup>154</sup> Victor Weber, "<u>Smart Cities Must Pay More Attention to the People Who Live in Them</u>" World Economic Forum (April 16, 2020).

<sup>155</sup> John Lorinc, "<u>How Can We Be Assured Smart CityTech Will do More GoodThan Harm? It All Comes Does to</u> <u>Governance</u>" The Toronto Star (January 14, 2021).

<sup>156</sup> Carlos Moreno, "Carlos Moreno: The 15-Minute City" C40 Knowledge Hub (October 2020).

<sup>157</sup> C40 Cities Climate Leadership Group, C40 Knowledge Hub, "<u>How to Build Back Better with a 15-Minute City</u>" (July 2020).

# Part 3 – Scenarios

Scenarios overview

**Continued Growth** 

Collapse

Discipline

Transform

# Scenarios overview

### Megatrends are slow moving forces that evolve over time.

Megatrends can provide leaders with a general scope of how they may be able to seize opportunities or mitigate risks connected to their organizations and communities. However, because megatrends are broad and multifaceted in nature, they may provide a limited view of how they may directionally play out as events, policies, and circumstances change over time.

Given the uncertainty about the future, methods such as alternative futures or scenarios can be used to further glean insights about future implications through narratives or hypotheses.<sup>158</sup> These narratives or hypotheses can further benefit from illustrative drivers, forces or megatrends to provide leaders with a directional approach because it allows them to stretch their imagination and think outside of the current boundaries they face. Scenarios are not predictive and are not meant to be a forecasting tool, but are useful in providing a high-level view of possible future narratives.<sup>159</sup>

In this report, the scenarios are based on the alternative futures model developed by Jim Dator,<sup>160</sup> which considers the four generic narratives of (1) Continued Growth, (2) Collapse, (3) Discipline, and (4) Transform. This model was selected because it provides organizations with a useful framework to describe the ten megatrends directionally, thereby providing a more robust vision of how the megatrends can directionally play out, (i.e. four very different narratives of the megatrends of what the world could look like in the future).<sup>161</sup> These scenarios are purely illustrative and may provide different outcomes by different organizations, and therefore should not be read as absolute.

### Scenarios are not predictive and are not meant to be a forecasting tool, but are useful in providing a high-level view of possible future narratives.

Where organizations are seeking more granular and predictive outcomes of future trends, risk assessment tools such as Dynamic Risk Assessment (DRA) can be used to provide "results through a scientifically structured process to construct a technically defensible quantitative cognitive risk network of the organisation's future risks and opportunities."<sup>162</sup> DRA is quantitative in nature and provides a holistic framework to understand what the likelihood of risks and opportunities are for organizations.

By contrast, the scenarios provided below are meant to be an iterative, qualitative and an imaginative exercise.



### How organizations can use the scenarios

Organizations and associations should use these scenarios to test the robustness of existing strategic planning and identify both risks and opportunities that may not yet have materialized but which need to be considered now to effectively mitigate or capture in future years. Using widely varying hypothetical scenarios for this purpose helps to identify the boundaries within which existing strategies remain effective, and identify critical trends that need to be more closely monitored as a result of their potential impacts on business objectives or the opportunities they create.

When considering these scenarios, organizations and associations should consider:

- Which scenarios present the greatest risks and opportunities and why?
- What are the risks and opportunities related to your organization, sectors and community?
- Is your organization contributing to the risks or the opportunities in this scenario?
- How could your organization or sector seize the opportunities and mitigate the risks associated with scenarios and the megatrends?
- What roles do your organization and sector play within the social, economic, technology and environmental contexts of these scenarios?
- Which megatrends would directly or indirectly impact your organization and community?
- What is your organization and sector's role in promoting or preventing certain outcomes within these scenarios?
- Which megatrends and related data would be useful indicators of the emergence of key risks or opportunities to your organization?

This exercise should be undertaken with a diverse group of stakeholders from across the company in order to promote cross-disciplinary and holistic views and approaches and to avoid groupthink.

Assessing the robustness of an organization's strategy against widely differing future scenarios serves to identify those conditions which present increased risks or opportunities to an organization. Additionally, industry and trade associations can ask the same questions above of its members, with a view to understanding how these scenarios play out within industries and sectors and will impact their members' success.

This section below is broken down into four parts, one for each scenario. The section begins with a high-level description for each future scenario and provides an illustrative direction for each of the ten megatrends. The four scenarios have taken COVID-19 into account.

# Continued growth

### Description of a continued growth scenario

In the **continued growth** scenario, the directional trajectory is upward economic and technological growth.<sup>163</sup> In the context of how it applies to Canada from now until 2030, despite the negative impact of the pandemic, the recovery is swift – there is rapid and continued growth in all sectors.

### Ten megatrends directionally described in a continued growth scenario

Digital and data economy	Accelerating at a rapid pace; businesses and industries are transforming.
The impacts of climate change	Global temperatures continue to increase and will continue on a 3°C trajectory by 2100.
Shifting social norms and values	Renewed focus on societal inequalities as people and communities are being left behind.
Future skills	Future skills are critical for individuals adapting to a digital and data economy and the automated workplace.
De-carbonization	Continued momentum creating a patchwork of decarbonization strategies and responses in public and private sectors.
COVID-19: social inequalities	Society is in a better economic position, but the disparity becomes more pronounced between various groups within society.
Globalization in a state of flux	Global Value Chains are restored – however, many organizations adopt resiliency strategies.
Automation and the workforce	High job displacement and inequalities are exacerbated in regions across Canada.
False information	False information continues to impact social, business and political spheres. Businesses are increasingly targeted.
Technology, sustainability and urbanization	Technology is leveraged to help cities expand and become more efficient and sustainable.

# Collapse

### Description of a collapse scenario

In the **collapse** scenario, growth at the prior pace has not only stalled, but proven to be unsustainable.<sup>164</sup> In the context of Canada over the next decade, the way of life prior to COVID-19 and throughout it, has highlighted the weaknesses of strictly focusing on economic and technological growth. In this scenario, the impact of COVID-19 is prolonged, and the economy, and growth in general has stalled and is on a decline.

### Ten megatrends directionally described in a collapse scenario

Digital and data economy	Reliance on technology has declined due to a backlash in the growth.
The impacts of climate change	Unprecedented disruption of the global climactic system causes harm.
Shifting social norms and values	Norms and values continue to shift due to the prolonged impact of COVID-19 resulting in extreme changes to the social and corporate landscape.
Future skills	Education and training structures were unfit for purpose and were unable to fulfill demand.
De-carbonization	Creation of economic divide due to the advantages of some businesses and industries.
COVID-19: social inequalities	Social inequalities have fragmented society causing a divide.
Globalization in a state of flux	"Globalization is dead."
Automation and the workforce	Automation caused considerable job loss and has been abandoned.
False information	Continued political and commercial disruption and polarization.
Technology, sustainability and urbanization	Cities are unsustainable and continue to contribute to pollution, congestion and poverty.

# Discipline

### Description of a **discipline** scenario

The **discipline** scenario is one where everything is measured (e.g. consumption, energy use, resources) in order to achieve common goals of sustainability.<sup>165</sup> In the context of Canada over the next decade, this scenario is based on values and principles of ESG and the SDGs, which have become the lens which society is using to address social, economic, governance and technology – and to deal with the impacts of COVID-19.

### Ten megatrends directionally described in a discipline scenario

Digital and data economy	Businesses are using data and technology to measure and promote a secure, sustainable and balanced society.
The impacts of climate change	Global warming has slowed to 2°C, allowing populations and industries to thrive without disruption.
Shifting social norms and values	Organizations are focused on helping vulnerable groups and communities develop a sustainable life – and are held accountable by shareholders and investors.
Future skills	Skills and training focus on sustainability and social wellbeing.
De-carbonization	Net zero is the new norm – embraced by all organizations.
COVID-19: social inequalities	Social wellbeing is the focus of organizations. Organizations are transparent and held accountable.
Globalization in a state of flux	Less focus on consumption, more focus on green and clean technology, and reshoring have created sustainable Global Value Chains.
Automation and the workforce	The value proposition for organizations is to enhance social good and sustainability. Automation eliminates mundane tasks.
False information	There is no social value in false information and it no longer serves society.
Technology, sustainability and urbanization	Technology is used to promote sustainability and help eliminate social inequalities.

# Transform

### Description of a transform scenario

In the **transform** scenario humans enjoy the benefits of unbounded exponential technological growth.<sup>166</sup> Automation, biotechnology and artificial intelligence underpin society. In Canada, from now to the next decade, there is an abundance of all resources and everyone has equal access to them – there is no need to work – leisure is the central focus as technology does the heavy lifting in society. In this scenario, biotechnology was leveraged to eliminate the mutation and spread of the pandemic.

### Ten megatrends directionally described in a transform scenario

Digital and data economy	The convergence of technologies such as quantum computing, artificial intelligence and 5G have transformed all aspects of life.
The impacts of climate change	The world is fully adaptive to climate change, having the ability to absorb any climatic effects (e.g. floating cities), while harnessing weather events (e.g. power generation from storms).
Shifting social norms and values	Societal values and norms are set on the collective benefits of society.
Future skills	Future skills continue to focus on digital and soft skills – but for leisure, as work is technology driven and handled by a few public and private sector partnerships.
De-carbonization	The economic system is designed to systematically use and repurpose any GHG emissions that would normally be released into the atmosphere – completely changing the way businesses are operated.
COVID-19: social inequalities	Social inequalities no longer exist because all needs are taken care of at a very basic level. Literacy rates are at their highest, and individuals who are able to work, can.
Globalization in a state of flux	All manufacturing is green, automated and re-shored. Travel is simulated and virtual.

Automation and the workforce	All tasks are automated, including tasks typically not associated with automation (e.g. social, cognitive and caregiving tasks). People can work for leisure.
False information	Artificial intelligence has been leveraged to filter and combat false information.
Technology, sustainability and urbanization	Intelligent (smart) cities, infrastructure and mobility are the norm, even in rural areas. Cities are sustainable and self-powered.

### **References: Part 3 – Scenarios**

### Page 63

<sup>158</sup>There are various methodologies that can be used for scenario planning. See UNDP, Global Centre for Public Service Excellence, "<u>Foresight Manual: Empowered Futures for the 2030 Agenda</u>" (Singapore: UNDP, 2018).

<sup>159</sup> Jim Dator, "<u>Alternative Futures at the Manoa School</u>" (2009) 14:2 Journal of Futures Studies 1.

<sup>160</sup> Jim Dator, "<u>Alternative Futures at the Manoa School</u>" (2009) 14:2 Journal of Futures Studies 1.

<sup>161</sup> Jim Dator, "<u>Alternative Futures at the Manoa School</u>" (2009) 14:2 Journal of Futures Studies 1. For example, the 2x2 Matrix model would only take into consideration the two or three main forces.

<sup>162</sup> KPMG, "Dynamic Risk Assessment" (May 2020) at 2.

### Page 65

<sup>163</sup> Jim Dator, "<u>Manoa's Images of the Futures</u>" Compass (July 2017) at 4.

#### Page 66

<sup>164</sup> Jim Dator, "<u>Manoa's Images of the Futures</u>" Compass (July 2017) at 4.

### Page 67

<sup>165</sup> Jim Dator, "<u>Manoa's Images of the Futures</u>" Compass (July 2017) at 5.

### Page 68

<sup>166</sup> Jim Dator, "<u>Manoa's Images of the Futures</u>" Compass (July 2017) at 6.

# Part 4 – Appendices

Appendix A – Remaining trends

Appendix B – Impact area risk and opportunity criteria

### This section lists the remaining twenty-five megatrends.

The trends listed here (twenty-five) and the ten listed above were all selected based on a preliminary literature review. All thirty-five trends were initially provided to the twenty-five respondents in the survey guide who were then asked to select their top trends based on the methodology, qualifiers and definitions that were described in **Part 2**. These twenty-five trends are equally useful for organizations and associations to consider, as they might have a greater impact and priority on some sectors and organizations than the ten megatrends identified above. Organizations, including associations, are encouraged to review this list of megatrends to identify which are likeliest to also create risks or opportunities, and factor these into strategic planning. The ten megatrends listed above have been removed from this list as they have been expanded on in **Part 2 – Megatrends**.

### **Artificial Intelligence**

In November 2020 it was announced that DeepMind, an Alphabet company, had solved a 50 year-old challenge in biology, demonstrating artificial intelligence's (AI) "... potential to dramatically accelerate progress in some of the most fundamental fields that explain and shape our world."<sup>167</sup> Earlier in 2020, a beta generative pre-trained transformer (GPT-3) was released – a natural language processing tool – capable of producing language-based content.<sup>168</sup> It has been suggested that GPT-3s will have the potential to automate tasks.<sup>169</sup>

While these applications provide a glimpse into the current and future applications of 'narrow' AI, it (AI) is already being used across industries, from consumer goods, to manufacturing, medicine, professional and legal services, and transportation.<sup>170</sup> Advances in complementary technologies including 5G, quantum computing and IoT will help accelerate the use of AI in telecommunications and healthcare but also become more commonly used across all industries.

### **Hyper-connectivity**

The Internet of Things (IoT), coupled with 5G will change the connectivity landscape in Canada.<sup>171</sup> It is expected that by 2025, IoT devices will "...generate more than half of the world's data..." and that 5G is a critical component of that infrastructure.<sup>172</sup> Features of 5G include "...data speed, latency, efficiency, reliability, capacity and security" and will enable IoT devices to connect seamlessly and outside of the traditional architecture.<sup>173</sup>

This technology will enhance the need for edge-computing which allows for localized processing, closer to the end user.<sup>174</sup> 5G will help accelerate intelligent cities and transportation, autonomous vehicles, manufacturing, healthcare, and help lay the ground for a new era of services.<sup>175</sup>
# **Biotechnology**

Biotechnology can be defined as the "...application of science and technology to living organisms, as well as parts, products and models therefore, to alter living or non-living materials for the production of knowledge, goods and services."<sup>176</sup> The economic impact is also expected to be broad in areas of human health,<sup>177</sup> consumer products, materials and energy and agriculture.<sup>178</sup> It been suggested that "[a]s much as 60 percent of the physical inputs to the global economy could, in principle, be produced biologically."<sup>179</sup>

Biotechnology offers sustainable opportunities such as cultured proteins that could drastically reduce animal consumption, or plant-based substitutes for common materials.<sup>180</sup>

## Human 2.0

Human enhancement uses technology to increase or enhance human performance. Enhancement can apply to the body (e.g. physical) or mind (e.g. cognitive) and can include a wide array of technologies such as wearables, brain-computer interfaces (BCI), and prosthetic limbs.<sup>181</sup> While human enhancement may "restore" certain abilities, others may use this for purely enhancement purposes.<sup>182</sup> BCIs are technologies that can "read" brain signals, and depending on the intended use of the algorithm, can result in certain actions.<sup>183</sup> Companies are currently working on brain computer interfaces that rely on AI algorithms to allow individuals to communicate by thought alone.<sup>184</sup> Advancement in BCIs have the potential to change the way humans express themselves, manifest movement and exert control over objects.<sup>185</sup>

# Augmented, virtual and mixed realities

Augmented and virtual realities (AR and VR, respectively) individually or mixed have become an increasingly important trend. Applications of these technologies have been widely associated with video games and social media,<sup>186</sup> but their application spans much farther, and can apply to education, sports, mental health and retail. Given the social distancing requirements of COVID-19, it has even been suggested that mixed reality could help recreate a "full-sense" immersive environment while working from home, going to school and other experiences.<sup>187</sup>

These technologies help fill the "connection" and experiential void that many have experienced due to not interacting with the physical world.<sup>188</sup> Virtual tourism may also become a reality, as many people have been hesitant to travel through 2020.<sup>189</sup> It has been projected that the AR and VR markets combined it will reach over \$100 billion by 2027.<sup>190</sup>

# **Quantum Computing**

Quantum computing (based on the laws of quantum mechanics) is a dynamic and powerful type of computing that has the potential to solve complex problems and accelerate artificial intelligence, medicine and cryptography with the speed and capacity that would be impossible with computers or supercomputers.<sup>191</sup> Cryptography is currently used in much of the way we protect information and information technology systems (via encryption). It has been suggested that quantum computing could break these encryptions, posing a threat to much of our digital environment.<sup>192</sup>

Governments around the world, including the United States and China, as well as tech giants, such as IBM,<sup>193</sup> Alibaba,<sup>194</sup> Microsoft and Google<sup>195</sup> have been competing to develop quantum computers and technology.<sup>196</sup> While it is currently in its infancy – there is great anticipation of quantum computing's potential.<sup>197</sup> In Canada, it has been estimated that by 2030, quantum computing has the potential to generate \$8.2 billion in revenues, and \$142.2 billion by 2040.<sup>198</sup>

## **Responsible Innovation**

Over the last decade, considerable technological advancements across all aspects of society and the economy have created new opportunities in the way individuals connect, travel, learn and work. While there are numerous positive outcomes of technology, there have been growing concerns about the social impact of technologies on people. These concerns include the collection and use of vast amounts of personal information,<sup>199</sup> the use of biometrics and facial recognition technology,<sup>200</sup> and algorithmic biases.<sup>201</sup> To mitigate weaknesses in regulatory and normative frameworks in these emerging areas,<sup>202</sup> particularly those related to artificial intelligence, principles documents,<sup>203</sup> impact assessment and assurance tools<sup>204</sup> and standards<sup>205</sup> are being developed highlighting calls for alignment of technological with ethical and human rights principles to help safeguard people and society.<sup>206</sup>

## Cyberattacks

Increased reliance on transformative technologies such as artificial intelligence, automation and quantum computing combined with the increasing connectivity of devices, intelligent cities, transit and critical infrastructure,<sup>207</sup> can lead to increasing risks of cyber-attacks on these systems.<sup>208</sup> Cyber-attacks have typically been associated with breaches to major corporations, however there have been increasing threats of cyberattacks on small and medium sized business,<sup>209</sup> on physical infrastructure (power grids, plants, etc),<sup>210</sup> and on people (deepfakes and false information)<sup>211</sup>. Statistics Canada estimates that in 2019, one-fifth of Canadian businesses were "…impacted by cyber security incidents."<sup>212</sup>

Furthermore, artificial intelligence can be used maliciously to enhance the sophistication of attacks, which can harm "digital security," "physical security" and "political security."<sup>213</sup> Between now and 2030, there are going to be increased vulnerabilities as technologies continue to advance rapidly and with sophistication.

## Wellbeing at work

Health and safety concerns have greatly altered the employment landscape for numerous industries. While many industries have been able to adapt to a remote-working model in the face of COVID-19, there are still many challenges that have not been structurally integrated, including work-life balance, safety and wellbeing. Concerns for physical wellbeing include issues related to the workspace, lack of physical activity and ergonomics.<sup>214</sup> Mental health has also become a great concern where employees have to navigate issues including understanding workplace

expectations, social distancing isolation and work-life balance.<sup>215</sup> For example, the International Labour Organisation has pointed to research demonstrating that individuals working from home will work longer hours, through weekends and evenings, which can lead to burnout and reduced output.<sup>216</sup> For many, COVID-19 has made work-life balance even more difficult.<sup>217</sup>

## The physical landscape of work

COVID-19 has triggered a transformation in existing business models, industries, and to social interactions. Remote working had already been on an upward trend globally,<sup>218</sup> but the pandemic expedited this trend as many businesses had to close the physical workspace immediately to prevent the spread of the virus.<sup>219</sup> As more time passes, it is predicted that it will be less likely for sectors that had more easily adapted to an online environment, to return to the pre-pandemic model.<sup>220</sup>

There have already been several high profile organizations that have made a shift to remote working either indefinitely or permanently.<sup>221</sup> This will impact a number of areas including urbanization, urban planning and the housing market.<sup>222</sup> It will also place an emphasis on connectivity, increasing the need for all Canadians to have access to Internet services to allow participation in the economy.<sup>223</sup>

# Tackling gender inequality

Gender inequality in the workplace had generally been trending in a positive direction: as of 2019, the ratio of women to men in the workforce was 87.4%, and female-to-male mean years in education received was 103.1%.<sup>224</sup> However, the gender wage gap has continued to stagnate.<sup>225</sup> In Canada, the median earning difference in relation to the earnings of men was 17.6% in 2019, 4.6% behind the OECD median.<sup>226</sup>

There are concerns that COVID-19 has altered some of these trends, as women have been impacted disproportionately during the lockdowns due to childcare responsibilities, and also due to the nature of their work in other sectors where the composition is predominantly made up of women, such as in retail, hospitality, and healthcare (e.g. nursing and long-term care) facilities.<sup>227</sup> In April, it was reported by RBC that women's participation in the economy had declined to rates not seen since the 1980s.<sup>228</sup>

## Water security

Canada is custodian to one fifth of the world's freshwater supply, but holds only 7% of the world's renewable freshwater<sup>229</sup> Given the importance of freshwater in Canada, there has been renewed interest in studying Canada's water security.<sup>230</sup> Several concerns have been identified in studies that have been conducted over the last few years, including the realization that there is insufficient data to accurately measure the health of Canada's waters<sup>231</sup> as well as overall concerns about threats to and health of water ecosystems. World Wildlife Fund Canada identified that there were significant threats across Canadian watersheds relating to pollution and habitat loss.<sup>232</sup> The same study assessed the health of watersheds and found that many of the watersheds were "below the 'threshold of good'" while none were considered to be "very good."<sup>233</sup> In addition to this study, there has been concern that the flow of water from glaciers

to rivers due to the disappearance of glaciers will negatively impact the availability of water in regions of Alberta.<sup>234</sup> Given the importance of water reliance in Canada, changes to this delicate ecosystem may have devastating consequences.<sup>235</sup>

## Circular economy

The World Bank estimates that global waste will reach roughly 3.40 billion tonnes by 2050.<sup>236</sup> Canada is the eighth most waste-producing country among the OECD member states, the majority of which (510 kg per capita per year) is being sent to landfills.<sup>237</sup> One method of reducing waste creation is investing in a circular economy. The premise of a circular economy is one that "...aims to move away from the conventional linear "take-make-waste" system",<sup>238</sup> developing and producing goods which will end up being thrown out at the end of the lifecycle, to one that keeps the "...value of resources in the economy." <sup>239</sup> It has been suggested that the circular economy is based on three core principles. First, that waste should be designed out of the product; second, that products and their core components should remain in use, and third, retooling social thinking to be intentional about positively impacting the earth.<sup>240</sup> The "[g]lobal uptake of the circular economy has increased over the past five years. Several countries in Europe and Asia have adopted circular-economy strategies, and momentum is growing in Canada" <sup>241</sup> (including The Canada-wide Strategy on Zero Plastic Waste).

# Nature/species loss

The global Living Plant Index shows that between 1970 and 2016, there has been an "…average 68% fall in populations of mammals, birds, amphibians, reptiles and fish…" worldwide.<sup>242</sup> The top three contributors to loss in overall populations are habitat loss and degradation (52%), followed by species overexploitation (17.9%) and invasive species and disease (14.4%).<sup>243</sup> Between the same years, in Canada, there was a decline of 59% in "populations of Canadian vertebrate species currently assessed as at risk nationally by the Committee on the Status of Endangered Wildlife in Canada."<sup>244</sup> Furthermore, since 1970, it has been reported that there has been a net loss of 2.9 billion birds across North America.<sup>245</sup>

Despite these declines, a recent study suggests that the widespread loss of vertebrate populations is actually concentrated in a small number of "deeply declining" populations, and not across all species.<sup>246</sup>

The interconnectedness of humans, wildlife and the environment has demonstrated that degradation in one area will affect others.<sup>247</sup> There are not only health consequences related to the environment (e.g. food security and climate regulation, animals as disease-carriers), but also economic consequences (e.g. supply chains, raw materials, agricultural decline, resource constraints).<sup>248</sup>

# Accountability for eliminating racism

Throughout Canadian history and in the present, there have been numerous examples highlighting the structures of systemic racism and racial inequalities, specifically toward Black,<sup>249</sup> Indigenous<sup>250</sup> and People of Colour (BIPOC). More recently over the last few years, incidents across Canada and the United States have demonstrated that racism and racial inequalities continue to persist and further emphasize the need for a

whole-of-society approach.<sup>251</sup> This responsibility rests with individuals, organizations, institutions and the government. As such, there has been a wave of organizations, that have mobilized to act and ensure that their values are aligned with inclusivity, allyship and human rights.<sup>252</sup> Despite this shift, there have been heightened experiences of discrimination throughout the pandemic.<sup>253</sup>

## Access to the Internet

COVID-19 has highlighted the necessity of Internet access, especially in the context of education and employment.<sup>254</sup> Individuals who do not have access to high-speed Internet are at a disadvantage because they are unable to participate in the employment opportunities or in classes that have shifted online. Access to the Internet (access to both the technology and affordability) is a major part of the solution.<sup>255</sup> The CRTC reported that in 2017, 37% of rural communities, 27.7% of First Nations communities, but otherwise 84.1% across Canada had access to broadband networks at "50/10 Mbps, unlimited".<sup>256</sup> Despite the availability of technology in urban areas, individuals across Canadian urban communities also experienced barriers to internet access.<sup>257</sup>

In 2019, the Government of Canada unveiled its strategy<sup>258</sup> aimed at providing "affordable, high-speed Internet" across Canada.<sup>259</sup> More recently, in light of COVID-19, the Government of Canada announced that it would be investing an additional \$750 million (for the total of \$1.75 billion) towards the strategy.<sup>260</sup>

# Reconciliation and the Recognition of the Rights of Indigenous Peoples

When the 2007 United Nations Declaration on the Right of Indigenous Peoples (UNDRIP)<sup>261</sup> was originally adopted by the UN Generally Assembly, Canada had voted against it, later endorsing it with qualification in 2010, and eventually endorsing it in 2016.<sup>262</sup> Notably, Canada's endorsement followed the Truth and Reconciliation's Commission call to all levels of government to "to fully adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples as the framework for reconciliation."<sup>263</sup>

On December 3, 2020, the Federal Government introduced legislation (Bill C-15, *An Act respecting the United Nations Declaration on the Rights of Indigenous Peoples*)<sup>264</sup> to implement the in Canada. The Federal Government stated that "[t]he purpose of this Bill is to affirm the Declaration as a universal, international, human rights instrument with application in Canadian law and provide a framework for the Government of Canada's implementation of the Declaration."<sup>265</sup> Once it is passed into law, it would require the Government to work in consultation with Indigenous Peoples to "...take all measures necessary to ensure the laws of Canada are consistent with the Declaration, prepare and implement an action plan to achieve the Declaration's objectives, table an annual report on progress to align the laws of Canada and on the action plan."<sup>266</sup> In 2019, the Government of British Columbia passed Bill 41 – 2019 *Declaration on the Rights of Indigenous Peoples Act* to become the first Canadian jurisdiction to implement UNDRIP.<sup>267</sup> Despite these steps toward reconciliation and the recognition of the rights of Indigenous Peoples that have been long awaited<sup>268</sup> there is still a lot of work ahead.<sup>269</sup>

# Remote working and urbanization

As people transitioned into remote working arrangements due to social distancing measures, numerous organizations have embraced either indefinite or permanent work from home solutions.<sup>270</sup> The removal of geographical constraints for work and elimination of commuting to the physical workplace has provided individuals with an opportunity to revisit the need to live within commuting distance of the workplace. Some have considered moving out of urban zones, because they no longer have to commute to work. A poll published in June 2020 suggests that one in four survey participants are considering the move to areas with more space (likely due to living and working from home) and lower density populations.<sup>271</sup> Others have suggested a rebooting of urban spaces, where the need to commute for any needs at all would be drastically reduced. The "fifteen-minute city" is a neighborhood where individuals "…live, work, get supplies, take care of themselves, educate themselves and enjoy themselves" within a fifteen-minute radius.<sup>272</sup> It is too soon to anticipate what, if any, long term effects will result from remote working.<sup>273</sup>

# **Future of mobility**

In 2019, the impending mobility landscape shift was largely attributed to three main trends "…electrification of vehicles (EVs) and alternative powertrains, connected and autonomous vehicles (CAVs) and Mobility-as-a-Service (MaaS)."<sup>274</sup> However, it is likely that COVID-19 may have, in the short term, altered the trajectory of the latter, as remote working, shutdowns and e-commerce were adopted amid safety concerns which drastically reduced use of public transportation and forms of MaaS.<sup>275</sup> Despite the recession in personal transportation habits, there are already indications that the future of commercial transportation is continuing to evolve.<sup>276</sup> For example, drone delivery is being considered as a possible avenue to keep up with e-commerce.<sup>277</sup> Even prior to the pandemic, companies were showing interest in CAVs for distribution and delivery.<sup>278</sup>

# **Global Value Chains: resilience**

International trade, and increasingly GVCs have contributed to knowledge sharing, international investments, and entry into new markets.<sup>279</sup> However, there is evidence suggesting that over the years there had been a reduction in offshoring and foreign inputs, and the value chain has gotten shorter.<sup>280</sup> Furthermore, disruptions (e.g. environmental disaster, trade war) have been occurring more frequently (roughly 3.7 years), forcing some companies to re-evaluate their strategies around resilience.<sup>281</sup> This is more pronounced with COVID-19. A 2020 report on GVCs stated that roughly 93% of respondents indicated that they were planning for increased resiliency through multiple strategies including supplier diversification, increasing critical inventory and nearshoring and expanding supplier base.<sup>282</sup>

# **Technologizing business models**

Technologies such as 3D printing, artificial intelligence and robotics have been contributing to a shift in the global value chain landscape.<sup>283</sup> Notably, because of COVID-19, investment in technology has been prioritized across the global manufacturing sector.<sup>284</sup> These technologies enable highly specialized outputs allowing companies to produce complex and customizable products without the

traditional reliance on high-skilled labour.<sup>285</sup> At the same time, automation can diminish the dependency on lower cost labour, and the risks associated with human labour.<sup>286</sup> Reducing reliance on human labour creates opportunities for companies to reshore or nearshore based on their needs, and rely less on the lower-wage benefits of offshoring.<sup>287</sup> Nearshoring and reshoring can help companies navigate their value chains with better oversight, flexibility and control over their operations.<sup>288</sup> Digital platforms may further break the chain of intermediaries, allowing individuals to connect directly with their suppliers.<sup>289</sup>

# Aging population and low fertility rate

Canada's aging population and low fertility rate are set to significantly impact the demographic composition of Canada over the next decade.<sup>290</sup> It is estimated that by 2030, seniors will make up roughly a quarter of the population.<sup>291</sup> This will impact the cost of care and the availability of resources (capital, financial, healthcare and social) to properly mitigate this impending shift.<sup>292</sup> In 2019 it was reported that Canada's fertility rate was at its lowest, dropping to 1.47 (births per woman) from 3.94 sixty years ago.<sup>293</sup> The fertility rate may further decline due to the uncertainty and impact (financial, social etc) of COVID-19.<sup>294</sup> The low fertility rate will only exacerbate the labour force participation needed to help sustain the finances needed to support the eventual needs of the aging population.<sup>295</sup>

## Silver economy

While Canada's aging population is on course to increase to a quarter of the population over the next decade, it is also important to consider that the life-expectancy is expected to increase.<sup>296</sup> Measures include extending the retirement age or capitalizing on "Silver Economy" innovations to help create opportunities for seniors to live a fulfilling and autonomous life.<sup>297</sup> This can have a hugely positive impact because it may help alleviate the pressure on institutions and healthcare facilities and institutions as Canada's "...investment as a percentage of gross domestic product" in this area is below that of its fellow Organisation for Economic Co-operation and Development members.<sup>298</sup> Smart homes and "age-tech" could enable seniors to receive the care they need on an as-needed basis from the comfort of their home.<sup>299</sup>

# Immigration

Immigration will continue to be an important trend in Canada. Given Canada's aging population and low fertility rates, immigration is an important pillar of Canada's society and economy.<sup>300</sup> It is expected that by 2030, Canada's population growth will be exclusively credited to immigration.<sup>301</sup> Immigration numbers did experience a shortfall because of the pandemic, and the government has addressed this by increasing their immigration targets to 1.2 million over the next three years, which represents roughly 50,000 more than originally planned.<sup>302</sup>

# **Corporate purpose**

ESG has become an imperative for organizations across Canada. In November 2020, the heads of eight of Canada's largest pension funds issued a statement asking for standardized reporting requirements in an effort to improve transparency and disclosure.<sup>303</sup> Canada's attitudes toward ESG have evolved, with reports that investors are seeing a sharp increase in the use of ESG principles in their investment strategies.<sup>304</sup> This is consistent with the increased proportion of institutional investors in Canada and Europe that believe that an ESG portfolio will outperform (55% and 68% respectively) and creates a striking comparison with US institutional investors, where those who believe an ESG-integrated portfolio will outperform (28%) is relatively similar to those who think an ESG -integrated portfolio will underperform (26%).

COVID-19 has contributed to a shift in the way that organizations are approaching ESG.<sup>305</sup> For example, in KPMG's report on global manufacturing's response to COVID-19, it was reported that "...79 percent of manufacturers' CEOs say their response to the pandemic has caused their focus to shift towards the social component of their environmental, social and governance (ESG) program"<sup>306</sup> and that 76% of "...chief executives say the company's purpose dictated their approach to the pandemic response with their stakeholders."<sup>307</sup>

# **References: Appendix A**

#### Page 72

<sup>167</sup>The AlphaFold Team, "<u>AlphaFold: A Solution to a 50-Year-Old Grand Challenge in Biology</u>" DeepMind (November 30, 2020).

<sup>168</sup> Guillaume Thierry, "<u>GPT-3: New AI Can Write Like a Human But Don't Mistake That For Thinking – Neuroscientist</u>" The Conversation (September 17, 2020).

<sup>169</sup> H James Wilson and Paul R Daugherty, "<u>The Next Big Breakthrough in Al Will be Around Language</u>" Harvard Business Review (September 23, 2020); GPTs have weaknesses and shortcomings including gender and racial biases, see Khari Johnson, "<u>Al Weekly: The Promise and Shortcomings of OpenAl's GPT-3</u>" Venture Beat (July 24, 2020).

<sup>170</sup> For example across financial services, retail, transportation and healthcare, see KPMG, <u>Living in an Al World:</u> <u>Achievements and Challenges in Artificial Intelligence Across Five Industries</u>, KPMG (2020); The development of 'general' Al is in the distant horizon, see James Vincent, "<u>This is When Al's Top Researchers Think Artificial General Intelligence Will</u> <u>be Achieved</u>" The Verge (November 27, 2018); Federico Berruti, Pieter Nel and Rob Whiteman, "<u>An Executive Primer on</u> <u>Artificial General Intelligence</u>" McKinsey & Company (Article) (April 29, 2020).

<sup>171</sup> Robert Davidson and Ryan McLaughlin, "<u>5G: Jumpstarting Our Digital Future</u>" Information and Communications Technology Council (Ottawa: ICTC, 2018) at 9.

<sup>172</sup> Intel, "Intel 5G and IoT: Connecting a Data-Driven World," (last accessed December 3, 2020); Paolo Collela, "5G and IoT: Ushering in a New Era" Ericsson (last accessed December 3, 2020).

<sup>173</sup> KPMG, "Converging 5G and IoT: A Faster Path to Smart Manufacturing" KPMG (2019) at 3-4.

<sup>174</sup> Ericsson, "Edge Computing and Deployment Strategies for Communication Service Providers: White Paper" GFMC-20:000097 (February 2020).

<sup>175</sup> Robert Davidson and Ryan McLaughlin, "<u>5G: Jumpstarting Our Digital Future</u>" Information and Communications Technology Council (Ottawa: ICTC, 2018); Paolo Collela, "<u>5G and IoT: Ushering in a New Era</u>" Ericsson (last accessed December 2, 2020); Matthew Halliday, "<u>Powering the Machines with 5G</u>" The Globe and Mail (May 26, 2020).

#### Page 73

<sup>176</sup> Steffi Friedrichs and Brigitte van Beuzekom, "<u>Revised Proposal for the Revision of the Statistical Definitions of</u> <u>Biotechnology and Nanotechnology</u>" OECD Science, Technology and Industry Working Papers 2018/01 (Paris: OECD, 2018) at 8.

<sup>177</sup> It is estimated that given the vast collection of health, biological and environmental data being collected, advancement in human health will continue to develop at a rapid pace, see World Economic Forum "<u>6 Expert Essays on the Future</u> <u>of Biotech</u>" WEF (January 23, 2020) EY, "<u>Are You Reframing Your Future or Is the Future Reframing You: Understanding</u> <u>Megatrends Will Help You See Opportunities Where Others Don't</u>" 3rd ed, EYQ 3rd edition (June 2020) at 68-73.

<sup>178</sup> Michael Chui et al, "<u>The Bio Revolution: Innovations Transforming Economies, Societies, and Our Lives</u>" McKinsey Global Institute (May 2020) at 10 -12.

<sup>179</sup> Michael Chui et al, "<u>The Bio Revolution: Innovations Transforming Economies, Societies, and Our Lives</u>" McKinsey Global Institute (May 2020) at 1.

<sup>180</sup> Michael Chui et al, "<u>The Bio Revolution: Innovations Transforming Economies, Societies, and Our Lives</u>" McKinsey Global Institute (May 2020) at 43.

<sup>181</sup> Kasey Panetta, "<u>GartnerTop 10 StrategicTechnologyTrends for 2020</u>" Gartner (October 21, 2019); ForbesTechnology Council, "<u>12Tech Leaders Discuss the Most Intriguing Applications of Human Augmentation</u>" Forbes (May 14, 2020).

<sup>182</sup> Policy Horizons Canada, "Social Futures: Exploring Social Futures" Government of Canada (2019).

<sup>183</sup> For example, in 2018, a research team in Toronto was using BCIs to record recalled images of faces, see Don Campbell, "<u>Do you See What I See? Researchers Develop Mind-Reading Algorithm to Reconstruct What We Perceive</u>" University of Toronto (February 22, 2018); In Waterloo, another team is working on neurorehabilitation to help individuals suffering from strokes and spinal-cord injuries, see University of Waterloo, <u>Brain-Computer Interfaces</u> (last accessed November 27, 2020).

<sup>184</sup> Edd Gent, "<u>Brain-Computer Interfaces Are Coming: 'Consensual Telepathy,' Anyone?</u>" The Washington Post (June 11, 2017).

<sup>185</sup> See for example, Lauren Golembiewski <u>"Are you Ready for Tech that Connects to Your Brain?</u>" Harvard Business Review (September 28, 2020); Alexandre Gonfalonieri <u>"What Brain-Computer Interfaces Could Mean for the Future of Work</u>" Harvard Business Review (October 6, 2020).

<sup>186</sup> Nick Wingfield and Mike Issac, "<u>Pokéman Go Brings Augmented Reality to a Mass Audience</u>" New York Times (July 11, 2016).

<sup>187</sup> Ericsson, "<u>The Dematerialized Office: A Vision of the Internet of Senses in the 2030 Future Workplace</u>" Ericsson (October 2020); Nick Statt, "<u>FacebookTeases a Vision of Remote Work Using Augmented and Virtual Reality</u>" he Verge (May 21, 2020).

<sup>188</sup> Ibid; Saemoon Yoon, "<u>17 Ways Technology Could Change the World by 2025</u>" World Economic Forum (June 23, 2020).

<sup>189</sup> Bernd Debusmann Jr, "Coronavirus: Is Virtual Reality Tourism About to Take Off?" BBC News (30 October 2020)

<sup>190</sup> Chris Versace, Lenore Elle Hawkins and Mark Abssy, <u>"A Multibillion DollarTrend: When Virtual Reality Meets Augmented Reality</u>" Nasdaq (November 17, 2020) citing from Fortune Business Insights.

<sup>191</sup> IBM, "<u>What is Quantum Computing?</u>" (last accessed November 29, 2020); Talia Gershon, "<u>Quantum Computing Expert</u> <u>Explains One Concept in 5 Levels of Difficulty</u>" Wired (June 25, 2018); Amit Katwala, "<u>Quantum Computing and Quantum</u> <u>Supremacy, Explained</u>" Wired (March 5, 2020).

#### Page 74

<sup>192</sup> Canadian Centre for Cyber Security, "<u>Addressing the Quantum Computing Threat to Cryptography (ITSE.00.017)</u>," Communications Security Establishment (May 2020).

<sup>193</sup> IBM, "<u>What is Quantum Computing?</u>" (last accessed November 29, 2020).

<sup>194</sup> Alibaba DAMO Academy, "<u>X Laboratory: Quantum Lab</u>" (last accessed November 29, 2020).

<sup>195</sup> Google, "Demonstrating Quantum Supremacy" YouTube (October 23, 2019).

<sup>196</sup> See for example, Tom Simonite, "<u>Google, Alibaba Spar OverTimeline for 'Quantum Supremacy'</u>" Wired (May 19, 2018).

<sup>197</sup> Ibid; The Economist, "Commercialising Quantum Computers" The Economist (September 26, 2020).

<sup>198</sup> National Research Council Canada, Economic Impact of Quantum Technology, (last accessed December 1, 2020).

<sup>199</sup> Innovation, Science and Economic Development Canada, "<u>New Proposed Law to Better Protect Canadians' Privacy and</u> <u>Increase their Control OverTheir Data and Personal Information</u>" Government of Canada (News Release) (November 17, 2020).

<sup>200</sup> Office of the Privacy Commissioner of Canada, "<u>Clearview AI Ceases Offering its Facial Recognition Technology in</u> <u>Canada</u>" (July 6, 2020).

<sup>201</sup> Joy Buolamwini and Timnit Gebru, "<u>Gender Shades: Intersectional Accuracy Disparities in Commercial Gender</u> <u>Classification</u>" (2018) 81 Proceedings of Machine Learning Research 1.

<sup>202</sup>Teresa Scassa, "New Privacy Bill is a Data Protection Reset for Canada" Policy Options (November 24, 2020).

<sup>203</sup> See examples of principles documents that outline ethical approaches to AI development, Anna Jobin, Marcello lenca and Effy Vayena, "<u>The Global Landscape of AI Ethics Guidelines</u>" (2019) 1 Nature Machine Intelligence 389; Jessica Fjeld, Nele Achten, Hannah Hilligoss, Adam Christopher Nagy and Madhulika Skrikumar, "<u>Principled Artificial Intelligence:</u> <u>Mapping Consensus in Ethical and Rights-Based Approaches to Principles for AI</u>" The Berkman Klein Center for Internet & Society Research Publication Series, Research Publication No 2020-1 (January 15, 2020).

<sup>204</sup> Government of Canada, "<u>Responsible Use of Artificial Intelligence (AI)</u>" (last accessed November 20, 2020); Government of Canada, "<u>Algorithmic Impact Assessment</u>" (last accessed November 20, 2020); CIO Strategy Council, "<u>CIO</u> <u>Strategy Council Launches AI Ethics Assurance Program In Collaboration with KPMG</u>" (November 16, 2020).

#### 205 Ibid.

<sup>206</sup> Anna Jobin, Marcello lenca and Effy Vayena, "<u>The Global Landscape of Al Ethics Guidelines</u>" (2019) 1 Nature Machine Intelligence 389; Jessica Fjeld, Nele Achten, Hannah Hilligoss, Adam Christopher Nagy and Madhulika Skrikumar, "<u>Principled Artificial Intelligence: Mapping Consensus in Ethical and Rights-Based Approaches to Principles for Al</u>" The Berkman Klein Center for Internet & Society Research Publication Series, Research Publication No 2020-1 (January 15, 2020); See also OECD, "<u>What are the OECD Principles on Al</u>?" OECD (last accessed November 20, 2020); United Nations, <u>Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of OurTime</u> (September 2020) at 23; Katie Henry and Andries Terblanche, "Post COVID 19: The New Reality" KPMG (Dynamic Landscape Assessment Research Report) May 2020 (unpublished) at 4.

<sup>207</sup> World Economic Forum in Collaboration with the University of Oxford, "<u>Future Series: Cybersecurity, Emerging</u> <u>Technology and Systemic Risk</u>" (Insight Report) (November 2020).

<sup>208</sup> Ibid. EY, "Are You Reframing Your Future or Is the Future Reframing You: Understanding Megatrends Will Help You See Opportunities Where Others Don't" 3rd ed, EYQ 3rd edition (June 2020) at 34-35.

<sup>209</sup> A poll of 300 small and medium-sized businesses revealed that 18%have experienced a "...cyber attack or data breach in the last two years," see Insurance Bureau of Canada, "<u>Small Businesses in Canada Vulnerable to Cyber Attacks</u>" IBC (September 25, 2019); Peter Nowak, "<u>Why Small Businesses Cannot Afford to Skimp on Cybersecurity</u>" The Globe and Mail (July 27, 2020); Harry Sharma, "<u>Creating Opportunity in the Pandemic Recovery Through Digital Infrastructure</u>" Conference Board of Canada (OpEd) (October 27, 2020).

<sup>210</sup> Canadian Centre for Cyber Security, "<u>National CyberThreat Assessment 2020</u>" (Ottawa: Communications Security Establishment, 2020) at 21.

<sup>211</sup> Ibid at 13; World Economic Forum in Collaboration with the University of Oxford, "<u>Future Series: Cybersecurity, Emerging Technology and Systemic Risk</u>" (Insight Report) (November 2020) at 30; World Economic Forum, <u>The Global Risks Report 2020</u> (Insight Report) (January 2020) at 62-63; Conference Board of Canada, <u>Canada 2030: The Defining Forces Disrupting Business</u> (August 2018) at 39; United Nations, <u>Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of OurTime</u> (September 2020) at 121.

<sup>212</sup> Statistics Canada, "About One-Fifth of Canadian Businesses Were Impacted by Cyber Security Incidents in 2019" Statistics Canada (October 20, 2020) Of these reported incidents, 43% large, 29% medium and 18% small businesses.

<sup>213</sup> Miles Brundage et al, <u>The Malicious Use of Artificial Intelligence: Forecasting, Prevention, and Mitigation</u> February 2018) at 6; Stuart Roberts, <u>"Global Al Experts Sound the Alarm: Leading Researchers Co-Author Unique Report Warning of the</u> <u>Malicious use of Al in the Coming Decade</u>" University of Cambridge (last accessed November 20, 2020).

<sup>214</sup>The Economist Intelligence Unit, "<u>The Future of Work and Digital Wellbeing: Protecting Employees in a COVID-19-Shaped World</u>" The Economist (October 2020) at 28.

#### Page 75

<sup>215</sup> Ibid at 30-31.

<sup>216</sup> International Labour Organization, "<u>Teleworking During the COVID-19 Pandemic and Beyond: A Practical Guide</u>" (2020) at 5 and 13.

<sup>217</sup> PwC, "Canadian Workforce of the Future Survey: Employees and Employers Adjust to a New World of Work in the COVID-19 Era" (2020).

<sup>218</sup>The Economist Intelligence Unit, "<u>The Future of Work and Digital Wellbeing</u>: <u>Protecting Employees in a COVID-19-Shaped World</u>" The Economist (October 2020), cited research rom Global Workplace Analytics, this report states that working from home increased by 159% between 2005 and 2018 and that by 2020, 56% of employees stated that they could conduct some aspect of their work from home at 5.

<sup>219</sup> Zechuan Deng, Rene Morissette and Derek Messacar, "<u>Running the Economy Remotely: Potential for Working from</u> <u>Home During and After COVID-19</u>" Statistics Canada (May 28, 2020) Between 2000 and 2018, roughly 10% of Canadian workers were conducting some form of work from home, despite the fact that roughly four in ten workers in occupations could actually be carried out from home. Due to the pandemic, in the last week of March 2020, it was reported that roughly 39% were working from home.

<sup>220</sup> BBC, "<u>Coronavirus: How the World of Work May Change Forever</u>" BBC Worklife (October 23, 2020); Brandie Weikle, "<u>Office Work Could be Changed Forever by COVID-19. Here's why that Matters</u>" CBC News (September 7, 2020).

<sup>221</sup> For example Shopify is now a "digital by default company", see Stacy Kauk, "<u>What Does Working Remotely Mean for</u> <u>the Planet?</u>" Shopify Blog (June 22, 2020).

<sup>222</sup> Francis Fong, "<u>The Future of Remote Work</u>" Chartered Professional Accountants Canada Pivot Magazine (October 23, 2020); United Nations, <u>Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of Our Time</u> (September 2020) at 115.

<sup>223</sup> Innovation, Science and Economic Development Canada, "<u>Canada's Connectivity Strategy</u>" (Ottawa: last accessed November 24, 2020).

<sup>224</sup> J Sachs et al, <u>The Sustainable Development Goals and COVID-19.</u> Sustainable Development Report 2020 (Cambridge: Cambridge University Press, 2020) at 165. See also <u>World Bank, Ratio of female to male labor force participation rate (%)</u> (<u>modeled ILO estimate</u>), (last accessed November 24, 2020).

<sup>225</sup> J Sachs et al, <u>The Sustainable Development Goals and COVID-19. Sustainable Development Report 2020</u> (Cambridge: Cambridge University Press, 2020) at 165. See Colin McClelland, "<u>Canadian Women Made Nearly a Quarter Less that Men</u> <u>as Gender Bias Persists</u>," Financial Post (March 5, 2020) citing ADP, "<u>Women Still Earn a Quarter Less Than Men in Canada:</u> <u>ADP Canada</u>" ADP Press Release (March 5, 2020).

<sup>226</sup> OECD, Gender Wage Gap (2019).

<sup>227</sup> Statistics Canada, "Economic Impacts and Recovery Related to the Pandemic" Statistics Canada (October 20, 2020); Government of Canada, "From Risk to Resilience: An Equity Approach to COVID-19" (Ottawa: Public Health Agency of Canada, 2020) at 22 and 29; BC Women's Health Foundation, "Unmasking Gender Inequality: Revealing the Socioeconomic Impacts of COVID-19 on Women's Health" (November 2020) at 3-4 the report suggests that women have traditionally "been encouraged" to seek flexible employment so that they may be caregivers to children and other family at 3; Industry Strategy Council, "Restart, Recover and Reimagine Prosperity for All Canadians: An Ambitious Growth Plan for Building a Digital, Sustainable and Innovative Economy" (Ottawa: Industry Strategy Council, 2020) at 15 citing Yue Qian and Sylvia Fuller, "COVID-19 and the Gender Employment Gap Among Parents of Young Children" (2020) 46:S2 Canadian Public Policy S89.

<sup>228</sup> RBC Economics, "PandemicThreatens Decades of Women's Labour Force Gains" RBC (July 16, 2020).

<sup>229</sup> It is typically said that Canada is home to 20% of the world's freshwater, but "most of it is fossil water retained in lakes, underground aquifers, and glaciers" see Government of Canada, "<u>Water: Frequently Asked Questions</u>" (last accessed November 26, 2020).

<sup>230</sup> See Schuster-Wallace C.J., Sandford, R., and Merrill, S. <u>Water Futures for the World We Want</u> (2019) University of Saskatchewan, Saskatoon, Canada; World Wildlife Funds, <u>Watershed Reports: Introduction</u> (Last Accessed November 27, 2020); John Pomeroy, Chris DeBeer, Phani Adapa, Stephanie Merrill, "<u>How Canada Can Solve its Emerging Water Crisis</u>" The Conversation (March 28, 2019).

<sup>231</sup> World Wildlife Funds, <u>Watershed Reports: Introduction</u> (Last Accessed November 27, 2020); Bob Weber, "<u>Data Gaps</u> <u>Prevent Assessment of Most Canadian Watersheds: WWF Report</u>" The Globe and Mail (October 20, 2020); C Paquette, L Hemphill, A Merante and E Hendriks, "<u>Watershed Reports: A National Reassessment of Canada's Freshwater</u>" (Toronto: World Wildlife Fund Canada, 2020); Elizabeth Bush and Donald S Lemmen, eds, <u>Canada's Changing Climate Report</u> (Ottawa: Government of Canada, 2019) at 267.

<sup>232</sup> World Wildlife Funds, <u>Watershed Reports: Canada Profile (Threats)</u> (Last Accessed November 27, 2020).

<sup>233</sup> World Wildlife Funds, Watershed Reports: Canada Profile (Health) (Last Accessed December 25, 2020)

#### Page 76

<sup>234</sup> Sarah Rieger, "<u>Melting Glaciers will Bring Instability to More Than 1 Million Albertans' Water Supply</u>" CBC News (August 10, 2020) citing Sam Anderson and Valentina Radic, "<u>Identification of Local Water Resource Vulnerability to Rapid</u> <u>Deglaciation in Alberta</u>" (2020) 10 Nature Climate Change 933.

<sup>235</sup> Brandon Wei, "<u>Climate Change and Outdated Water Policy, Infrastructure Threaten Canadian Freshwater</u>" The Globe and Mail (November 19, 2019).

<sup>236</sup> Silpa Kaza, Lisa CYao, Perinaz Bhada-Tata and Frank Van Woerden, "<u>What a Waste 2.0: A Global Snapshot of Solid</u> <u>Waste Management to 2050</u>" (Washington: World Bank, 2018) at 3.

<sup>237</sup> Radio Canada International, "Canada Among Worst Waste-Producing Countries: Study" Levon Sevunts (October 15, 2019), citing Sensoneo, "<u>Global Waste Index 2019: The Biggest Waste Producers Worldwide: Sensonseo Global Waste Index 2019</u>"

<sup>238</sup> Environment and Climate Change Canada, "Circular Economy" (last accessed March 15, 2021).

<sup>239</sup> Environment and Climate Change Canada, "Circular Economy" (last accessed March 15, 2021).

<sup>240</sup> Ellen MacArthur Foundation, "What is Circular Economy?" (last accessed March 15, 2021).

<sup>241</sup> Environment and Climate Change Canada, "Circular Economy" (last accessed March 15, 2021).

<sup>242</sup> R.E.A Almond, M. Grooten and T. Petersen, eds, "Living Planet Report 2020: Bending the Curve of Biodiversity Loss" (Geneva: WWF, 2020) at 9.

<sup>243</sup> R.E.A Almond, M. Grooten and T. Petersen, eds, "Living Planet Report 2020: Bending the Curve of Biodiversity Loss" (Geneva: WWF, 2020) at at 20-21.

<sup>244</sup> Jessica Currie, James Snider and Emily Giles, "Living Plant Report Canada: Wildlife at Risk" WWF-Canada (2020) at 9.

<sup>245</sup> Kenneth V Rosenberg et al, "<u>Decline of the North American Avifauna</u>" (2019) 366:6461 Science 120. Notably, the most affected birds were common and not rare species. The authors state that 90% of the losses come from 12 common bird species "including sparrows, warblers, blackbirds, and finches." These losses have been attributed to human actions including those contributing to climate change, habitat loss and contamination.

<sup>246</sup> Anna Hargreaves et al, "<u>Clustered Versus Catastrophic Global Vertebrate Declines</u>" (2020) Nature.

<sup>247</sup> REA Almond, M Grooten and T Petersen, eds, "Living Planet Report 2020: Bending the Curve of Biodiversity Loss" (Geneva: WWF, 2020) at 78-92.

<sup>248</sup> REA Almond, M Grooten and T Petersen, eds, "Living Planet Report 2020: Bending the Curve of Biodiversity Loss" (Geneva: WWF, 2020) at 78-92. The authors note that while the origins of COVID-19 are not entirely known, viruses, such as SARS and Ebola were also animal-borne at 79; Joshua Berger et al,"Working Paper: Common Group in Biodiversity Footprint Methodologies for the Financial Sector" at 7 (Paris, ACTIAM, ASN Bank, CDC Biodiversite, 2018), as cited in Wim Bartels, Adrian King, Jennifer Shulman and Richard Threlfall, "The Time Has Come: The KPMG Survey of Sustainability Reporting 2020" KPMG Impact (December 2020); OECD "Biodiversity: Finance and the Economic and Business Case for Action" (Paris: OECD, 2019) at 106-109.

<sup>249</sup> See for example, Human Rights Commission of Ontario, <u>A Disparate Impact: Second Interim Report on the Inquiry into Racial Profiling and Racial Discrimination of Black Persons by the Toronto Police</u> (August 12, 2020); Chief People Officer, <u>"Status Update – Ombudsman Recommendations</u>" Toronto Transit Commission (September 24, 2019); Chief People Officer, <u>"TTC Status Update – Anti-Racism Strategy and Ombudsman Recommendations</u>" Toronto Transit Commission (February 25, 2020).

<sup>250</sup> Mary Ellen Turpel-Lafond, "In Plain Sight: Addressing Indigenous-specific Racism and Discrimination in BC Health Care" Government of British Columbia; Examples across the public sector: Quebec, "Death of Joyce Echaquan – Premier Francois Legault Extends on Behalf of the Quebec Government and Apology to the Family and Loved Ones of Joyce Echaquan" (October 2, 2020); Kristy Kirkup, "Joyce Echaquan's Death "Grim Reminder" of Racism in Health Care, Says Former Head of MMIWG Inquiry" The Globe and Mail (October 13, 2020); Indigenous Services Canada, "Statement by the Minister of Indigenous Services, the Minister of Crown-Indigenous Relations, the Minister of Health and the Minister of Northern Affairs on Eliminating Racism in the Healthcare System" (October 16, 2020); Marie-Claude Landry, "Statement –The Time to Address Anti-Indigenous Racism is Long Past Due" Canadian Commission on Human Rights (October 2, 2020); See for example, Ontario Human Rights Commission, "Under Suspicion: Issues Raised by Indigenous Peoples" (last accessed November 24, 2020).

#### Page 77

<sup>251</sup>Tim Arango et al, "<u>What to Know about the Death of George Floyd in Minneapolis</u>" NewYorkTimes (March 10, 2021); Tim Arango and Katie Benner, "<u>With New Grand Jury, Justice Department Revives Investigation in Death of George</u> Floyd" NewYorkTimes (February 23, 2021).

<sup>252</sup> Examples across the private sector: MaRS, "<u>The Coalition of Innovation Leaders Against Racism Launched, Announces Chair</u>" MaRS (June 29, 2020); Vivek Prabhu, "<u>Canadian CEOs Commemorate Launch of the BlackNorth Initiative</u>" Black North (July 15, 2020). Robert Davis and Elio Luongo, "<u>Corporate Canada Needs to Take an Active Role in Dismantling Anti-Black Racism</u>" The Globe and Mail (September 15, 2020); See RBC, "<u>RBC Media Statement: Actions Against Systemic Racism</u>" RBC (July 6, 2020); Bharat Masrani, "<u>A Message from Bharat Masrani: Additional Actions to Combat Racism</u> and its Impacts" TD Bank (June 17, 2020); CPP Investments "<u>Report on Sustainable Investing 2020</u>" Canada Pension Plan (November 2020) at 46.

<sup>253</sup> Note that this study was crowdsourced and as such not collected using probability-based sampling and therefore does not represent "the overall Canadian population), see, Statistics Canada, "<u>Experiences of Discrimination During the</u> <u>COVID-19 Pandemic</u>" The Daily (September 17, 2020)

<sup>254</sup> Marc Frenette, Kristyn Frank and Zechuan Deng, "<u>School Closures and the Online Preparedness of Children During the</u> <u>COVID-19 Pandemic</u>" Statistics Canada 11-626-X No 103; Clark Rabbior, "<u>Connect to Compete: Enabling Entrepreneurship</u> <u>in the Digital Age</u>" Public Policy Forum (October 8, 2020); Justin Trudeau, "<u>Connecting all Canadians to High-Speed</u> <u>Internet</u>" (News Release) (November 9, 2020).

<sup>255</sup> Another important component is access to technology (computers and phones).

<sup>256</sup> Canadian Radio-television and Telecommunications Commission, "<u>Communications Monitoring Report: 2019</u>" (Ottawa: CRTC, 2020) at 40.

<sup>257</sup> Adam Jacobson, "<u>Internet is the Only Lifeline They Have</u>: <u>Canada Needs to Confront</u> <u>'Digital Divide</u>' <u>Amid COVID-19</u> <u>Crisis</u>" CBC Radio (March 27, 2020).

<sup>258</sup> Innovation, Science and Economic Development Canada, <u>High-Speed Access for All: Canada's Connectivity Strategy</u> (Ottawa: ISED, 2019) at 4.

<sup>259</sup> Justin Trudeau, "<u>Connecting all Canadians to High-Speed Internet</u>" (News Release) (November 9, 2020).

<sup>260</sup> Twelve percent of Ontarian households are "underserved or unserved", see Ontario Government, "<u>Ontario Improving</u> <u>Broadband and Cell Service for Rural Communities</u>" Ontario Newsroom (June 3, 2020); In addition to Canada's digital divide, between rural and non-rural areas, there work being done to connect seniors and marginalized communities. City of Toronto, <u>City of Toronto and Partners Help Connect Vulnerable Populations with Internet Access During the</u> <u>COVID-19 Pandemic</u> (News Release) (April 28, 2020); In 2018 it was reported that only 60% of seniors over 65 in Canada have smartphones, see Statistics Canada, "<u>Smartphone use and Smartphone Habits by Gender and Age Group</u>" Table 22-10-0115-01; 71% of seniors used the Internet see Statistics Canada "<u>Canadian Internet Use Survey</u>" Statistics Canada (October 29, 2019); CRTC, Over 10,100 <u>Households in Northern Communities to Have Access to Improved Broadband</u> Internet Services (August 12, 2020).

<sup>261</sup> UN, <u>United Nations Declaration on the Rights of Indigenous Peoples</u>.

<sup>262</sup> Government of Canada, "Why does Canada want to implement the United Nations Declaration for the Rights of Indigenous Peoples?" (last accessed January 12, 2021).

<sup>263</sup> Crown-Indigenous Relations and Northern Affairs Canada, "<u>Canadian governments and the United Nations Declaration</u> on the Rights of Indigenous Peoples" (last accessed January 12, 2021).

<sup>264</sup> House of Commons of Canada, <u>Bill C-15 An Act respecting the United Nations Declaration on the Rights of Indigenous</u> <u>Peoples</u> (December 3, 2020). Notably, there was a prior Private Member's Bill (Bill C-262, An Act to ensure that the laws of Canada are in harmony with the United Nations Declaration on the Rights of Indigenous Peoples), that was introduced but did not pass.

<sup>265</sup> Government of Canada, "<u>Backgrounder: Bill C-15 – United Nations Deceleration on the Rights of Indigenous Peoples</u> <u>Act</u>" (last accessed January 12, 2021).

<sup>266</sup> Government of Canada, "<u>Backgrounder: Bill C-15 – United Nations Deceleration on the Rights of Indigenous Peoples</u> <u>Act</u>" (last accessed January 12, 2021).

<sup>267</sup> BC, Declaration On The Rights Of Indigenous Peoples Act, [SBC 2019] CHAPTER 44.

<sup>268</sup> Government of Canada, "<u>Implementing the United Nations Declaration on the Rights of Indigenous Peoples in</u> <u>Canada</u>" as stated on the website "...[the] Truth and Reconciliation Commission and the National Inquiry into Missing and Murdered Indigenous Women and Girls called on the federal government to implement the Declaration as the framework for reconciliation."

#### Page 78

<sup>269</sup> For example, re Federal Bill, see Brenda Gunn, "What Canadians Should Understand About the Federal UNDRIP Bill" The Globe and Mail (December 7, 2020); for the *BC Declaration on the Rights of Indigenous Peoples Act*, see, John Burrows and Christina Gray, "Rights and Responsibilities: Implementing UNDRIP in BC and in Our Own Communities" and Judith Sayers, "Opportunities and Barriers for the BC Declaration of Rights Act" in Hayden King, ed, <u>The UN</u> <u>Declaration on the Rights of Indigenous Peoples in Canada: Lessons from B.C.</u>, Yellowhead Institute (December 2020).

<sup>270</sup> Jean-Nicholas Reyt, "What Canada's Top CEOs Think About Remote Work" The Conversation (November 23, 2020).

<sup>271</sup> Ontario Real Estate Association, "<u>COVID-19 Pandemic Impacts Consumer Perceptions When it Comes to Buying or</u> <u>Selling a Home</u>" OREA (June 9, 2020), citing "<u>Homeownership Seen a Good Investment in COVID-19 Environment -</u> <u>Significant Part of Market Open to Virtual Purchase Experience</u>" Ontario Real Estate Association (Poll conducted by Nanos) (May 2020).

<sup>272</sup> Carlos Moreno, "<u>The Fifteen- Minute City: Rethinking Urban Life</u>" The OECD Forum Network (November 13, 2020); Tamar Satov, "<u>The Future of Cities: The End of the Rat Race Will Reshape Canada's Urban Centres</u>" BNN Bloomberg (December 16, 2020).

<sup>273</sup> Joe Berridge, "<u>The Resilient City: Why Canadian Metropolises With Thrive Despite The Pandemic</u>" The Globe and Mail (October 2, 2020).

<sup>274</sup> KPMG, "Mobility 2030: Transforming the Mobility Landscape" KPMG (September 2019) at 4.

<sup>275</sup> Cedric Mathieu, "<u>How COVID Has Re-Routed Canada's Mobility Future</u>" Betakit (November 12, 2020); Oliver Moore, "<u>A</u><u>Better Way: Can Urban Transit Bounce Back From the Pandemic?</u>" The Globe and Mail (November 13, 2020).

<sup>276</sup> Sasha Lekach, "What Coronavirus Means for the Future of Self-driving Cars" Mashable (September 3, 2020).

<sup>277</sup> Oliver Moore, "Drone Delivery Could Lead to Robots in the Sky" The Globe and Mail (November 14, 2020).

<sup>278</sup> Ross Marowits, "<u>Loblaw Says it Ordered 25 Tesla Electric Trucks, Wants Fully Electric Fleet by 2030</u>" Financial Post (November 17, 2017); Loblaw Companies Limited, "<u>Future is Bright with Self-Driving Trucks</u>" Loblaws (November 23, 2020).

<sup>279</sup> OECD, "<u>COVID-19 and Global Value Chains: Policy Options to Build More Resilient Production Networks</u>" Organisation for Economic Co-operation and Development (June 3, 2020) at 2.

<sup>280</sup> Ibid.

<sup>281</sup> Susan Lund et al, <u>Risk, Resilience and Rebalancing in Global Value Chains</u> McKinsey Global Institute (August 6, 2020) at 1.

<sup>282</sup> Susan Lund et al, <u>Risk, Resilience and Rebalancing in Global Value Chains</u> McKinsey Global Institute (August 6, 2020) at 17. Note that 60 supply chain executives were interviewed in May 2020; OECD, "<u>COVID-19 and Global Value Chains: Policy</u> <u>Options to Build More Resilient Production Networks</u>" Organisation for Economic Co-operation and Development (June 3, 2020) at 7.

<sup>283</sup> United Nations Development Program and World Economic Forum, <u>Reshaping Global Value: Technology, Climate, Trade</u> <u>– Global Value Chains Under Pressure</u> (2019) at 7.

<sup>284</sup> KPMG International, "<u>Global Manufacturing Outlook 2020: COVID-19 Special Edition: Adversity Leads to Opportunity</u>" KPMG International (2020) at 9. The survey of 315 CEOs indicated that 79% are prioritizing technology investments.

#### Page 79

<sup>285</sup> United Nations Development Program and World Economic Forum, <u>Reshaping Global Value: Technology, Climate, Trade</u> <u>– Global Value Chains Under Pressure</u> (2019) at 7.

286 Susan Lund et al, Risk, Resilience and Rebalancing in Global Value Chains McKinsey Global Institute (August 2020) at 3.

<sup>287</sup> Ibid. United Nations Development Program and World Economic Forum, <u>Reshaping Global Value: Technology, Climate,</u> <u>Trade – Global Value Chains Under Pressure</u> (2019) at 7. David Kucera and Fernanda Bárcia de Mattos, "<u>Automation,</u> <u>Employment, and Reshoring: Case Studies of the Apparel and Electronics Industries</u>" (2019) 41:1 Comparative Labor Law & Policy Journal 235 at 235. (Volume 41, Issue 1), note that the authors mention there is "…not an overall trend towards reshoring, recent empirical studies find evidence that the increased use of robotics and other automation technologies in developed countries is associated with reshoring" at 235.

<sup>288</sup> United Nations Development Program and World Economic Forum, <u>Reshaping Global Value: Technology, Climate, Trade</u> <u>– Global Value Chains Under Pressure</u> (2019) at 7.

<sup>289</sup> Ibid at 8.

<sup>290</sup> RBC, "Canada's Aging Population: What Investors Should Know for the 2020s" RBC (January 20, 2020).

<sup>291</sup> Ibid.

292 Ibid.

<sup>293</sup> Statistics Canada, <u>Births, 2019</u>, The Daily (September 29, 2020).

<sup>294</sup> Brandie Weikle, "<u>The COVID-19 Pandemic is Expected to Lower the Birth Rate. Here's Why that Matters</u>" CBC News (August 3, 2020).

<sup>295</sup> Conference Board of Canada, <u>Canada 2030: The Defining Forces Disrupting Business</u> (August 2018) at 7.

<sup>296</sup> RBC, "<u>Canada's Aging Population: What Investors Should Know for the 2020s</u>" RBC (January 20, 2020); OECD Economic Policy Paper no 27, "<u>Fiscal Challenges and Inclusive Growth</u>" (Paris: OECD, 2019) 7.

<sup>297</sup> OECD Economic Policy Paper no 27, "Fiscal Challenges and Inclusive Growth" (Paris: OECD, 2019) at 56.

<sup>298</sup> Bijan Teja et al, "Ensuring Adequate Capital Investment in Canadian Health Care" (2020) 192 CMAJ E677 at E677.

<sup>299</sup> Mitchell E Kutney and Kumanan Wilson, "<u>Age-Tech Will be Huge for the Silver Economy</u>" Policy Options (October 8, 2019).

<sup>300</sup> Immigration, Refugees and Citizenship Canada, "<u>Government of Canada Announces Plan to Support Economic</u> <u>RecoveryThrough Immigration</u>" Government of Canada (October 30, 2020).

<sup>301</sup> Immigration, Refugees and Citizenship Canada, "2020 Annual Report to Parliament on Immigration" Government of Canada (December 31, 2019); Conference Board of Canada, <u>Canada 2030: The Defining Forces Disrupting Business</u> (August 2018) at 6.

<sup>302</sup> Kathleen Harris, "<u>Federal Government Plans to Bring in More than 1.2M Immigrants in Next 3 Years</u>" CBC News (October 30, 2020); see Immigration, Refugees and Citizenship Canada, "<u>Notice – Supplementary Information 2020-2022</u> <u>Immigration Levels Plan</u>" Government of Canada (March 12, 2020).

<sup>303</sup>Tim Kiladze, "<u>Canada's Top Pension Funds Issue Rare Joint Call for Better ESG Disclosures</u>" The Globe and Mail (November 25, 2020).

#### Page 80

<sup>304</sup> David Milstead, "<u>Canada Sees Growth in ESG Investing as US Increasingly Rejects the Trend</u>" The Globe and Mail (October 14, 2020).

<sup>305</sup> RBC Global Asset Management, "<u>What COVID-19 Means for ESG: A Q&A with the RBC Global EquityTeam</u>" RBC GAM (August 11, 2020); Sharon Singh, Nick Karakachouk, Radha Curpen and James Beeby, "<u>Environmental, Social and Governance Considerations and the Investor Perspective</u>" Bennett Jones (June 3, 2020); KPMG, "<u>Purpose and Value</u> <u>Take Centre Stage: Banks Put ESG at the Heart of How They Operate in the New Reality</u>"; KPMG International, "<u>Global</u> <u>Manufacturing Outlook 2020: COVID-19 Special Edition: Adversity Leads to Opportunity</u>" KPMG International (2020).

<sup>306</sup> KPMG, "<u>Global Manufacturing Outlook 2020: COVID-19 Special Edition: Adversity Leads to Opportunity</u>" KPMG (2020) at 10.

<sup>307</sup> KPMG International, "<u>Global Manufacturing Outlook 2020: COVID-19 Special Edition: Adversity Leads to Opportunity</u>" KPMG International (2020) at 10.

# Appendix B – Impact areas, risk and opportunity criteria

The impact areas, and related risk and opportunity criteria described below were developed to capture the range of potential impacts associated with each megatrend.

The impact areas are not meant to be exhaustive, rather, they were selected and defined to align with the purpose of the report as described in the introduction, that is to identify "...ten societal megatrends and forces that may affect Canadian businesses and industries, and impact communities between now and 2030."

**"Business and profitability"** is defined as the degree to which a business has the potential to sustain and yields profit or financial gain.

## Critical risk (through to 2030)

- Megatrend will require fundamental changes to business strategies to maintain viability.
- Many existing / conventional industries will cease business under current business models.

#### Significant risk (through to 2030)

- Megatrend will increase the cost of running an existing/conventional business resulting in declining profitability.
- Some existing / conventional industries will cease business under current business models.

## Significant Opportunity (through to 2030)

- Megatrend gives new business models opportunity to scale.
- Megatrend will unleash cost savings/efficiencies and reduce the cost of doing business.

**"Employment"** is defined as the amount of jobs available (also considering job quality and pay) and the amount of skilled workers available.

#### Critical risk (through to 2030)

• Megatrend will displace many existing jobs / put people out of jobs.

## Significant risk (through to 2030)

• Megatrend will expose labour shortages / skill gaps that will require reskilling and or increased immigration to address.

#### Significant Opportunity (through to 2030)

Megatrend will create new jobs at scale.)

**"Health and Wellbeing"** is defined as the mental and physical health of society at large.

## Critical risk (through to 2030)

 Megatrend will have significant adverse impacts on many people's mental and/ or physical health.

#### Significant risk (through to 2030)

 Megatrend will have adverse impacts on some people's mental and/or physical health.

## Significant Opportunity (through to 2030)

• Megatrend will promote people's mental and/or physical health.

**"Social Cohesion and Equality"** the degree of social, economic and political inclusion of all.

## Critical risk (through to 2030)

• Megatrend will lead to increases in inequality (e.g. in terms of income, gender, race) and polarization between people with different backgrounds.

#### Significant risk (through to 2030)

• Megatrend will slow down existing actions to reduce inequality, sustaining current levels of inequality.

#### Significant Opportunity (through to 2030)

• Megatrend will empower and promote the social, economic and political inclusion of all (irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status) and will have a unifying effect.

"**Resilient Ecosystems**" is defined as the ecological quality of our natural environment (e.g. water, plants, animals, air, light, soil) and human society.

#### Critical risk (through to 2030)

• Megatrend will lead to significant degradation of ecosystems, threatening the ability to live in some areas and reducing the quality of life in many areas.

#### Significant risk (through to 2030)

• Megatrend will lead to continuing degradation of ecosystems, reducing the quality of life in some areas.

## Significant Opportunity (through to 2030)

• Megatrend will lead to significant improvements in environmental protection, restoring ecosystems and improving the quality of life in many areas.



Horizontal Policy Social Innovation and Community Development Directorate Employment and Social Development Canada / Government of Canada

Politiques Horizontales Innovation sociale et développement communautaire Emploi et Développement social Canada / Gouvernement du Canada

hrsdc-rhdcc.gc.ca