

# Planning When You Can't Predict

**Strategic  
Foresight and the  
Future of Work**



## Partners



The Diversity Institute conducts and coordinates multi-disciplinary, multi-stakeholder research to address the needs of diverse Canadians, the changing nature of skills and competencies, and the policies, processes and tools that advance economic inclusion and success. Our action-oriented, evidence-based approach is advancing knowledge of the complex barriers faced by under-represented groups, leading practices to effect change, and producing concrete results. The Diversity Institute is a research lead for the Future Skills Centre.



The Future Skills Centre (FSC) is a forward-thinking centre for research and collaboration dedicated to preparing Canadians for employment success. We believe Canadians should feel confident about the skills they have to succeed in a changing workforce. As a pan-Canadian community, we are collaborating to rigorously identify, test, measure, and share innovative approaches to assessing and developing the skills Canadians need to thrive in the days and years ahead. The Future Skills Centre was founded by a consortium whose members are Toronto Metropolitan University, Blueprint, and The Conference Board of Canada, and is funded by the Government of Canada's Future Skills Program.



SK Futures Inc. is a strategic foresight consultancy dedicated to enhancing the resiliency of individuals, organizations, and communities. We provide tailored and trusted advisory services to clients in Canada and globally, illuminating the risks and opportunities associated with multiple converging crises including human health, climate change, and technological acceleration. Using futures thinking methods, our approach is grounded in best practice and evidence, enabling our clients to develop resilient strategy today to ensure success tomorrow and beyond. Based in Toronto, Canada, our clients span innovative business, government, higher education, multilateral, not-for-profit, and non-governmental organizations.

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The opinions and interpretations in this publication are those of the authors and do not necessarily reflect those of the Government of Canada.



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# Foreword

## Planning When You Can't Predict: Strategic Foresight and the Future of Work

Policymakers, business leaders, and job seekers at some point need to grapple with the challenge of planning for the future under conditions of uncertainty. While some outcomes follow predictable patterns, others—such as global health pandemics or sudden wars—are not readily imagined when planning exercises take place. Yet these unpredictable occurrences can have weighty impacts not only on individuals personally, but on established global systems and operations.

*Planning When You Can't Predict: Strategic Foresight and the Future of Work* offers an introduction to strategic foresight methods and their application to the future skills conversation for newcomers to this approach. It offers a relevant, creative, yet methodical approach to help leaders, practitioners, and players in the broader skills development ecosystem consider a range of potential future-focused outcomes to inform today's decisions.

At the Future Skills Centre, we focus intently on ensuring that Canadians have the opportunities and resources to thrive in the future of work. It is critical to ensure that everyone, especially under-represented groups, can access opportunities to succeed and share in Canada's prosperity. As part of our mandate to strengthen Canada's skill development ecosystem, we can't stress enough the urgency of developing ways of thinking, policies, and programs that enable us to build a more equitable and inclusive future.

We thank our partners at the Diversity Institute and SK Futures Inc. for convening this research. Planning for the future is a perennial challenge for many, and strategic foresight approaches can help us think about the potential risks and opportunities—while acknowledging the uncertainties that lay ahead—as we prepare for the future of work. We also thank the Government of Canada for its support of a national future skills strategy that builds on evidence generation and practical delivery of skills training and assessment programs.

Pedro Barata  
Executive Director  
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# Executive Summary

How do you plan when you can't predict?

A number of transformations are underway that pose risks to—and opportunities for—the future of work in Canada. This report, *Planning When You Can't Predict: Strategic Foresight and the Future of Work*, introduces strategic foresight, a discipline that helps organizations and individuals think about and plan for the future in a context of radical uncertainty involving disruptive political, economic, social, technological, legal, and environmental changes. This paper is for newcomers to strategic foresight, whose organizations may benefit from the value that the discipline provides.

Strategic foresight is valuable for a range of stakeholders interested in the future of work and future skills. By providing an introduction and overview of strategic foresight and its implications for these areas, this report will enable readers to better engage with the strategic foresight literature and be better prepared to apply strategic foresight methods and findings to their work. For instance, policymakers will benefit from considering various uncertainties and may uncover an array of creative policy options. For businesses, including small and medium-sized enterprises, strategic



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foresight will support short-, medium-, and long-term strategic planning, ensuring the organization is equipped with the right talent to meet the needs of the future. Post-secondary institutions and partners in the skills development ecosystem also have an important role to play in teaching and creating opportunities to apply strategic foresight methods. Additionally, they can apply strategic foresight learnings to ensure students and future job seekers are equipped with the skills needed to be resilient in the future world of work.



To help our audiences plan more effectively for the future of work and future skills, this paper:

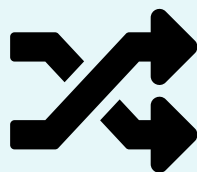
- > Shows how striving to predict the future of work using only traditional forecasting methods can be counterproductive and identifies the benefits of strategic foresight.
- > Defines fundamental strategic foresight concepts and provides examples of strategic foresight techniques from academic literature.
- > Identifies politics, economics, society, technology, law, environment and climate change, and health as major categories of trends affecting the future of work in Canada.
- > Shares useful strategic foresight approaches to help plan for the future of work and future skills and offers tips for implementation.
- > Provides an in-depth discussion of scenario planning, one of the most important strategic foresight methods for addressing the “era of converging crises.”

With so many forces shaping the future of work and future skills, the ability to stay resilient and plan strategically is of paramount importance. Given its many benefits and its broad applicability to a wide range of stakeholders, strategic foresight provides the tools to help plan when the future can't be predicted.



# Introduction

In a context of rapid change and major societal disruptions, preparing for the future world of work and future skills ranks among the most important considerations for Canadian policymakers, business leaders, individuals, and communities. However, discussions about the future of work and future skills have a poor track record of securing alignment between the skills employers and economies need and the skills job seekers have. This mismatch occurs in part because radical uncertainty makes prediction unreliable. Assumptions



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that inform forecasts are often error-prone due to the multitude of variables at play or the reliance on incomplete data. Labour market information, for instance, may be difficult to access<sup>1</sup> or have key limitations (for example, job posting data do not capture jobs not posted online<sup>2</sup>). Despite this, traditional approaches use economic and labour market forecasts built upon historical data and conventional assumptions to extrapolate labour market trends and skills demands into the future.

Even so, it *is* possible to improve how future of work and future skills strategies are informed. Strategic foresight offers innovative, methodical approaches to thinking about and planning for the future. The objective of strategic foresight is to help organizations navigate uncertainty by becoming more aware of risks *and* opportunities, allowing them to explore and test assumptions when so much is unpredictable. Unlike forecasting, strategic foresight provides a structured way to explore multiple futures to inform decision making. Strategic foresight reveals implicit assumptions, challenges dominant perspectives, and engages with surprising and significant potential disruptions that otherwise might be ignored or dismissed.





The future of work and future skills are indeed a complex puzzle, making them ideal topics for strategic foresight methods and approaches. Systemic shocks, such as geopolitical fragmentation,<sup>3</sup> the climate crisis,<sup>4</sup> and movements for racial and social equality,<sup>5</sup> are compounding and reshaping the future of work and future skills. Additionally, unanticipated events add major wrinkles to the way the future of work may unfold. While most eyes were on the disruptive effects of robotics, automation, artificial intelligence, climate change, demographic shifts, or deglobalization, few strategists described the need to plan for a global pandemic or a land war in Europe. Strategic foresight will help stakeholders augment existing strategic planning methods to shape and prepare for the futures of work.

This report offers an introduction to strategic foresight for policymakers, employers, job seekers, and the education and skills development ecosystem. It begins with

a brief history of strategic foresight, and then elaborates on its benefits for strategic planning. It goes on to identify and describe a number of the most important strategic foresight approaches and methods, namely horizon scanning, megatrends analysis, systems mapping, forecasting, backcasting, and the scenario planning method. Finally, the report identifies the opportunities that strategic foresight presents for stakeholders in the future of work and future skills ecosystem in Canada, a list that includes governments, employers (including small and medium-sized enterprises), workers, job seekers, students, traditional educational institutions (including post-secondary education), and skills development and training stakeholders outside of traditional education.

# Strategic Foresight: How It Can Contribute to Future Skills Strategy

## What is strategic foresight?

Strategic foresight is the deliberate, methodical, and imaginative exploration of what the future may hold, incorporating various methods to craft responses to major trends, weak signals of change, multiple scenarios, or other realities that could disrupt organizations and their stakeholders. While organizations may



*Strategic foresight mitigates risks by **helping organizations plan more effectively** amid uncertainty. It does so by **challenging assumptions and implicit biases** so that the present is well understood in relation to emerging risks and opportunities.*

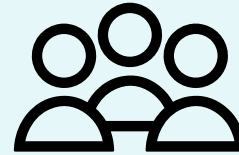
have goals and targets in mind, decision makers face radical uncertainty, which can yield strategic decisions that do not take into account plausible risks and opportunities. Strategic foresight mitigates risks by helping organizations plan more effectively amid uncertainty. It does so by challenging assumptions and implicit biases *so that the present is well understood in relation to emerging risks and opportunities.*<sup>6</sup> Learnings from strategic foresight might therefore help an organization navigate uncertainty by investing, for example, in new revenue-generating services, instituting better risk management, implementing a new community partnership, engaging with regulators on relevant issues, or charting a new course.

Strategic foresight has origins in military and corporate planning.<sup>7</sup> It grew in prominence from the 1950s onwards, first with RAND Corporation, a U.S. strategy think tank, and later with energy supermajor Royal Dutch Shell's scenario planning group in the late 1960s.<sup>8,9</sup> Later on, works like the Club of Rome's *Limits to Growth* brought foresight and futures studies to the attention of the public.<sup>10,11</sup> Since then, strategic foresight has evolved to support strategic planning for businesses, governments, multilateral

institutions, non-governmental organizations, not-for-profits, cities, and communities.

Strategic foresight has captured more attention and use in the policy arena, particularly after the events of 9/11.<sup>12</sup> The COVID-19 pandemic provided an additional shock and revealed the inadequacies of current paradigms of strategic thinking. In recent years, more businesses, governments, and institutions have established a dedicated strategic foresight function with responsibility for informing policy and strategy. Multilateral institutions such as the UN, international bodies such as the Organisation for Economic Co-operation and Development (OECD), and governments such as those in Australia, Canada, Finland, Singapore, and the United Kingdom have built dedicated capacity to apply strategic foresight techniques to inform policy and strategic decision making. In Canada, Policy Horizons Canada conducts strategic foresight exercises and analysis to inform Canadian public policy with a mandate “to help the Government of Canada develop future-oriented policy and programs that are more robust and resilient in the face of disruptive change on the horizon.”<sup>13</sup>

Capable and knowledgeable practitioners are key to mainstreaming strategic foresight. For decades, strategic foresight experts have applied foresight techniques to help decision makers and individuals explore a range of probable, preferable, and plausible futures to build more resilient, flexible, and adaptable organizations and people. Practitioners act as advisors in governance and strategy; assist with futures and



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foresight capacity building; lead foresight data, research, analysis, and knowledge translation; and engage in developing scenarios and facilitating their use by decision makers and stakeholders. As internal resources or external consultants, practitioners help organizations make strategic foresight useful and useable.

One strategic foresight method in particular, scenario planning, plans for radical uncertainty through multiple plausible, memorable, and distinct scenarios of the future so that a wide range of internal and external stakeholders can make sense of a fast-changing contextual environment and determine how to reframe strategy in the “here and now.”



## Benefits of strategic foresight for strategic planning

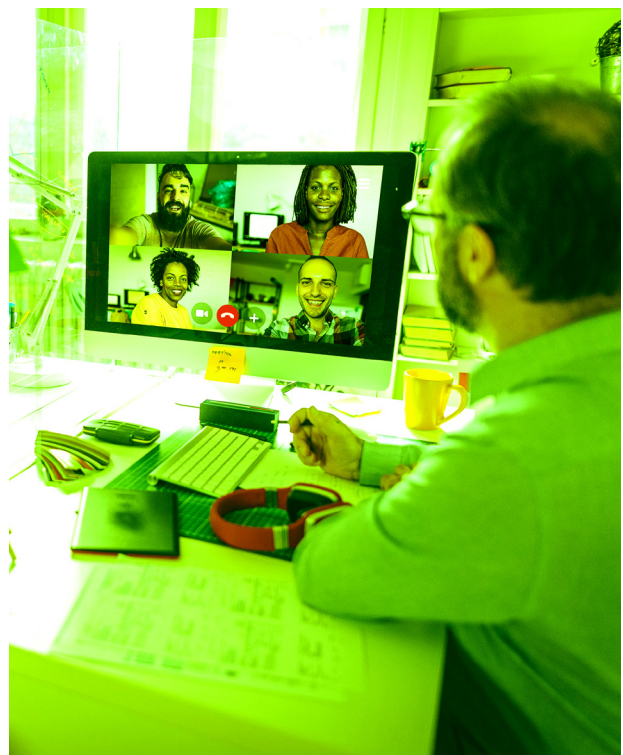
Strategic foresight emphasizes mindsets, methods, and tools that test key assumptions on which organizations, for better and for worse, bet their futures. Decisions are being made under conditions of turbulence, unpredictable uncertainty, novelty, and ambiguity (TUNA conditions), which create challenges when creating strategic plans.<sup>14</sup> Strategic foresight allows organizations and individuals to consider and factor in TUNA conditions, such as non-linear or exponential changes that create risks or opportunities; new technology-driven competitors that could disrupt an organization's business; actors that could affect the ability of politicians to govern or businesses to survive; or any other major external phenomenon that might generate shocks to business and society.

In an era of radical uncertainty, assuming that historical trends will remain linear is unwise at best and negligent at worst. Today, organizations and stakeholders cannot assume the historical stability of cause-and-effect relationships that traditional forecasting models assume. For example, the COVID-19 pandemic has rendered useless the neat economic models and forecasts that economists created for GDP growth, unemployment rates, and sectoral growth.<sup>15</sup>

Strategic foresight can help address challenges for stakeholders involved in the future of work in Canada, including

policymakers, employers (including SMEs), job seekers, and members of the education ecosystem. Strategic planning for the future of work and future skills against a background of radical uncertainty is challenging for all organizations and sectors, yet such planning is necessary for these organizations to meet their potential to be resilient, mitigate risk, and capitalize on opportunity. More specifically, the benefits of strategic foresight are that they help organizations and individuals:

- > Reframe strategy using scenario planning
- > Contextualize forecasts and predictions
- > Comprehend accelerating change and its wide-ranging disruptive implications for organizations and society
- > Build social capital



## Reframing strategy using scenario planning

Scenario planning is at the core of strategic foresight. It requires users to identify the key drivers, trends, and megatrends and systematically articulate potential futures depending on the extent of change and interaction among these key aspects of the contextual environment. It also encourages users to question their underlying assumptions about the future and confront the reality of TUNA conditions through the construction of multiple alternative scenarios. In so doing, it enables strategic planning that can account for, and build resilience across, multiple contingencies.

## Contextualizing forecasts and predictions

Forecasts and predictions are modelled using historical data. Current labour market information is limited and there is a lag between labour market movement and labour market data. Additionally, there is no guarantee that the future will be an extension of the past. As such, forecasting the future of work and future skills is notoriously difficult and prone to error. From a forecasting standpoint, no economic outlook reports warned against a pandemic-induced economic crisis. In contrast, a scenario planning exercise from 2017 imagined a pandemic and its consequences.<sup>16</sup>

## Comprehending accelerating change and its wide-ranging disruptive implications for organizations and society

Strategic foresight can be used to make sense of the speed and complexity associated with unpredictable change and then translate that comprehension to organizational response. Without challenging mental models of the world, decision makers tend to assume that change occurs in an incremental fashion. However, uncertainty in politics, economics, society, technology, regulation, and the environment forces organizations and individuals to better comprehend the uncertainty of accelerating change. Otherwise, organizations and individuals may end up preparing for a future that is already behind them.

## Building new social capital

Scenario planning helps to build the “cognitive dimension” of new social capital.<sup>17</sup> Scenario planning participants, including facilitators, must learn together, build shared systems of meaning, and make sense of threatening turbulence. Developing new relationships using scenario planning can engender the trust that participants need to have their mental models—and tightly held assumptions—challenged by plausible conceptual futures. By conducting foresight projects with decision makers and by co-creating scenarios, organizations can create buy-in to translate insights from foresight projects into action.



# Strategic Foresight: Useful Concepts and Approaches

The previous section discussed *why* strategic foresight is useful for informing strategic decision making. This section addresses the *how*: How can interested organizations and individuals do strategic foresight? What are the methods that strategic foresight practitioners use?

Strategic foresight draws on numerous methods with roots in multiple disciplines.<sup>18</sup> This section showcases several, beginning with an exploration of the horizon scanning method and the categories of trends associated with the method. Then it goes to a discussion of megatrends analysis, systems mapping, forecasting, and backcasting. The section concludes with scenario planning.

## Horizon scanning for the future of work and future skills

### Horizon scanning

Horizon scanning is commonly used early in the strategic foresight process. It supports “the acquisition and use of information about events, trends and relationships in an organization’s external environment,

the knowledge of which would assist management in planning the organization’s future course of action.”<sup>19</sup> It can be used in conjunction with some of the other strategic foresight methods described in this report. Horizon scanning is used to detect early signs (or “weak signals”) of important developments through systematic examination of potential change. Horizon scanning is based on systematic desk research, which can be done individually or in teams.<sup>20</sup> Weak signals are often discounted due to their low probability of occurring, but they can have large impact on the organization and the world.<sup>21</sup> Horizon scanning exercises may be open and explorative or scoped to specific project or task objectives.

In Canada, Policy Horizons Canada uses horizon scanning in its research as a fundamental part of the “Horizons Foresight Method” for providing a context for policy development and vision-building, calling scanning “the foundation of great foresight.”<sup>22</sup> Insights from horizon scanning help the federal government better consider longer-term issues more fully while dealing with short-term priorities.



## PESTLE-H framework

A commonly used horizon scanning framework is the PESTLE framework, which breaks down the areas of search into six broad categories: political, economic, social, technological, legal, and environmental. These are not mutually exclusive concepts, and trends can cross over into multiple categories.<sup>23</sup> The basic framework comes with variations: for example, Policy Horizons Canada uses STEEG (society, technological, economic, environmental, governance).<sup>24</sup>

Other frameworks include values as a trend category.<sup>25</sup> This report provides an overview of the PESTLE-H variation, which includes health as a trend category, an addition that reflects the effects of the COVID-19 pandemic on global physical and mental health.<sup>26</sup> The PESTLE-H categories and their relevance to the future of work and future skills are briefly described below and presented visually in Table 1.

**TABLE 1**  
Horizon scanning and the PESTLE-H framework

P	E	S	T	L	E	H
POLITICAL	ECONOMIC	SOCIAL	TECHNOLOGICAL	LEGAL	ENVIRONMENTAL	HEALTH
<ul style="list-style-type: none"> <li>&gt; Political ideologies</li> <li>&gt; Political platforms</li> <li>&gt; Policy proposals</li> <li>&gt; Political stability</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Interest rates</li> <li>&gt; Distribution of prosperity</li> <li>&gt; GDP and measures of economic growth</li> <li>&gt; Unemployment rate</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Demographic data</li> <li>&gt; Social and cultural values</li> <li>&gt; Inclusion of diverse populations</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Rate of technological development</li> <li>&gt; Adoption of technologies</li> <li>&gt; Effects of technology on labour market</li> <li>&gt; Research and development activity</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Labour regulations</li> <li>&gt; Technology regulations</li> <li>&gt; Environmental regulations</li> <li>&gt; Discrimination laws</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Local environmental impacts</li> <li>&gt; Climate change</li> <li>&gt; Sustainability initiatives</li> <li>&gt; Pressure from the public and non-governmental organizations</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Rates of mental illness</li> <li>&gt; Rates of chronic illnesses</li> <li>&gt; Life expectancy</li> </ul>

## **POLITICAL**

The political category can include, but is not limited to, political ideologies and platforms of national, provincial, and municipal governments. Political party platforms and policy proposals shape the landscape for the future of work and future skills in Canada.

## **ECONOMIC**

The economic category can include, but is not limited to, interest rates, distribution of economic prosperity, and measures of economic growth. For example, historically low interest rates may rise, reducing government capacity to borrow funds for public services. There may be limited capacity to borrow and pay more interest on debt, leading to a significant impact on resources available for public spending, including on future of work and future skills programs.

## **SOCIAL**

The social category can include, but is not limited to, demographics, values, culture, and social inclusion. Canadian demographics will continue to trend toward diversity; for example, according to Statistics Canada, by 2036, immigrants and racialized people will comprise 30% and nearly 40% of the Canadian population, respectively.<sup>27</sup> However, immigrants and racialized people continue to face barriers to the labour market.<sup>28</sup> The Indigenous population is growing quickly, increasing 42.5% since 2006, but Indigenous Peoples face systemic

barriers in education and is over-represented in jobs at risk of automation.<sup>29</sup> Women faced unequal labour market outcomes prior to the pandemic and have suffered from disproportionate effects.<sup>30</sup> These and other social changes will have an impact on the composition of the labour force and who has access to skills training resources, making it a significant consideration in conversations about the future of work and future skills.

## **TECHNOLOGICAL**

The technological category can include, but is not limited to, new technologies, rates of adoption of technologies, and the effects of technologies. Technologies—artificial intelligence, virtual reality (VR), advanced robotics, blockchain, remote work technologies, and social media, to name a few—disrupt the skills required for the labour market and the future of work. The public discourse on automation is a reflection of the anxiety naturally provoked by technological disruption.

## **LEGAL**

The legal category can include labour regulations, regulation of technology, and laws related to the environment. The legal category affects the future of work, as exemplified by modern labour and employment standards, stricter legislation and regulation of digital technologies and platforms, firmer legislation and regulation of environmental pollution and climate change, and more effective policies to integrate newcomers into Canadian society.

## ENVIRONMENTAL

The environmental category runs the gamut from sustainability initiatives, local environmental impacts, and climate change. Environment and climate change pose catastrophic risks. Canada's energy sector will affect and be affected by climate change, providing opportunities for clean technology.<sup>31</sup> Environmental degradation and extreme weather have mental and physical health impacts. These changes will have direct and indirect impacts on the future of work and future skills needed to respond to the changing environment and climate.

## HEALTH

Finally, the health category encompasses the health and well-being of the Canadian population. COVID-19 has demonstrated the effects of a global pandemic on the future of work. Rising chronic illnesses and co-morbidities—cardiovascular disease, respiratory illness, cancer, diabetes, mental illness, and obesity<sup>32</sup>—have implications for Canada's future workforce and its health systems. The mental health effects of global crises may have far-reaching and pervasive repercussions. In addition to the significant human cost, mental illness eats away at productivity, with depression and anxiety estimated to cost the global economy US\$1 trillion in lost productivity.<sup>33</sup>





## Complementary methods

Strategic foresight projects sometimes employ more than one method depending on their relevance. Four additional methods—megatrends analysis, systems mapping, forecasting, and backcasting—are discussed below:

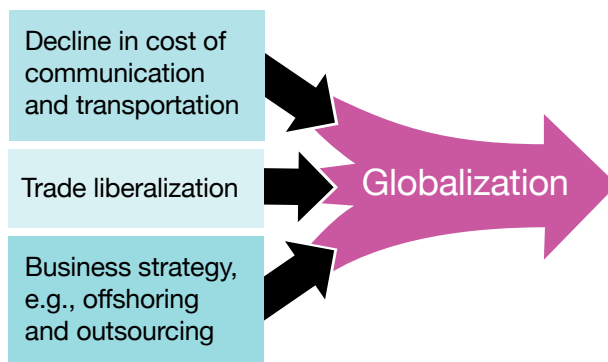
### MEGATRENDS ANALYSIS

Megatrends are large-scale forces: they are the combination of multiple trends that promise to cause massive societal repercussions in the coming years, such as climate change. While megatrends analysis seeks to understand the implications of such large-scale forces, the scope of analysis depends on the issue under study.<sup>34</sup> A megatrends analysis of important topics such as the future of work and future skills can yield valuable knowledge and insights, as has been demonstrated by previous megatrend analyses in this area.<sup>35,36</sup>

An exemplary work of megatrends analysis is the OECD's *Future of Work and Skills* paper presented in 2017.<sup>37</sup> The report identifies three megatrends relevant to the future of work in G20 countries: globalization, technological progress, and demographic change. Each megatrend is the cumulation of research into multiple component trends.<sup>38</sup> To illustrate, a visualization of the “globalization” megatrend is depicted in Figure 1.

**FIGURE 1**

### Megatrends analysis



Source: Created by the report authors based on the OECD's megatrend analysis in: OECD. (2017). *Future of work and skills*. [https://www.oecd.org/els/emp/wcms\\_556984.pdf](https://www.oecd.org/els/emp/wcms_556984.pdf)

To do megatrends research, organizations can first scan for trends and use traditional research methods to collect data. Then, the organization can look for patterns and macro-level interconnections between the trends and data to determine megatrends for the coming decades. Existing reports on megatrends written for the sector may also be informative, although these reports may not speak to specific organizational contexts. For example, a report by the OECD on the future of work may help contextualize global megatrends, but may omit some of the local dynamics happening in the Canadian context.

## SYSTEMS MAPPING

Systems mapping allows strategic foresight practitioners to manage complexity by visualizing a system with its various parts and interconnections.<sup>a</sup> The map of the system traces out the interconnections between the various parts and attempts to determine how the parts in a system influence each other to illustrate the complexities of an issue. Systems mapping also assists with identification of the key factors that drive a system.<sup>39</sup> Parts in the system can interact in non-linear ways, creating unforeseen transformations to the system, and can even interact in a circular feedback loop. Systems mapping is an iterative process; new information and trends can be added to systems at any point. Additionally, systems demonstrate



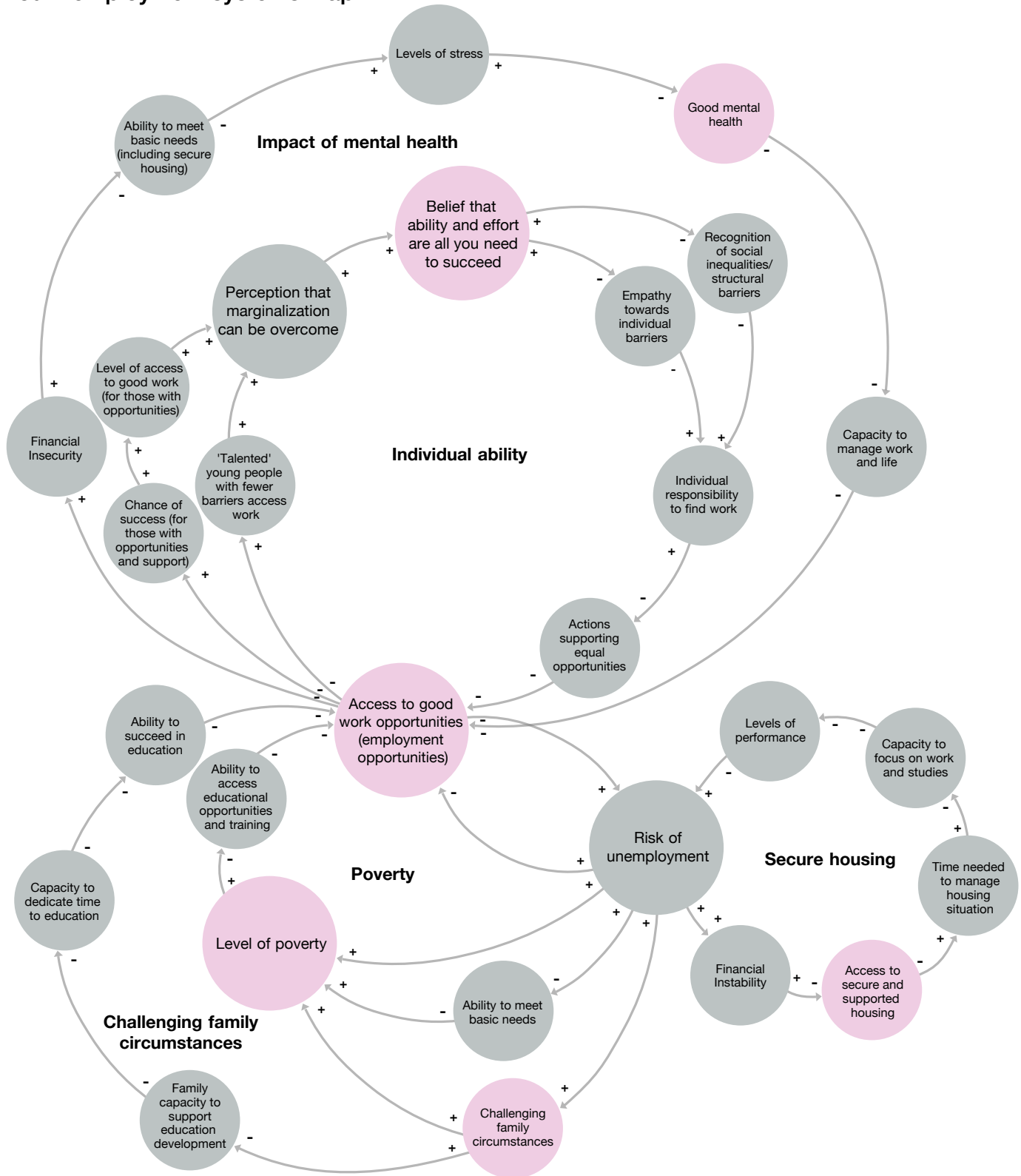
a The “parts” of a system are factors that influence the main issue or other parts.

emergent properties, meaning that new interconnections and patterns can emerge to change the structures of the system completely. Systems mapping allows organizations to escape uni-causal and linear thinking to better prepare for change.<sup>40</sup>

An example is the Youth Employment Systems Map by the Youth Futures Foundation in the United Kingdom. The Systems Map was created by studying the experiences of youth of marginalized backgrounds and through stakeholder engagement. Systems mapping was used to analyze the youth employment “system,” to understand the driving forces behind unemployment and the systemic nature of the issues, and to identify where resources and efforts could be expended to make improvements.<sup>41</sup> The “Access to Good Work Opportunities” portion of the systems map is reproduced in Figure 2 below.<sup>b</sup> The Youth Employment Systems Map consists of multiple causal loops with grey and coloured circles representing factors. The coloured circles are the principal drivers in each causal loop. The circles in the causal loop are connected by arrows, accompanied by the plus (“+”) sign or the minus (“-”) sign, which shows how factors are related. For example, as “Risk of Unemployment” increases (marked by the + sign), the “Level of Poverty” increases (again marked by the + sign). And when “Level of Poverty” increases, the “Ability to access educational opportunities and training” decreases.

b Note, it was impossible to represent the level of detail in the original Youth Employment Systems Map in report format; report authors suggest that the readers visit the original webpage to explore the Systems Map in all its complexity.

**FIGURE 2**  
**Youth employment systems map**



Source: Adapted from: Youth Futures Foundation. (2021). *Youth employment system map*. <https://youthfuturesfoundation.org/our-work/identify/youth-employment-system-map/>



To build a systems map, an organization should define the scope and the system it wants to explore. It should identify the main problem (for example, the youth unemployment system) and then focus on building out the parts, or the relevant factors that affect the main problem (for example, access to good work opportunities). The organization can continue to build out the systems map by identifying factors that affect the first-order factors. Once the relevant parts are identified, the next step is to determine the causal linkages between the various elements. As stated before, the systems map offers an opportunity to explore causal loops and non-linear causal relationships. A systems map is iterative and subject to change, so organizations should feel free to test out their mental maps of the world using this method and update the map to reflect new information and causal structures.

## FORECASTING

Despite the limitations to forecasting noted earlier in this report, it can serve as a valuable addition to overall foresight analysis when used in conjunction with other foresight methods. Forecasting relies on a set of data and modelling assumptions to make predictions about the future. It could provide a baseline prediction, assuming that current conditions remain the same.<sup>42</sup> However, it fails to take uncertainty into account and should be used alongside other strategic foresight methods.

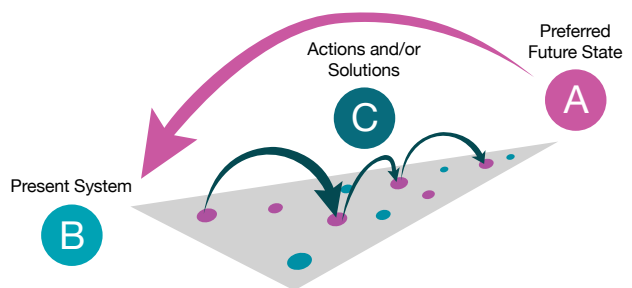
Forecasting is particularly useful for some long-ranging and predictable trends. It can calculate demographic trends (for example, the percentage of Canada’s population that

will reach retirement age, the total working age population in Canada’s labour market) and other relatively predictable inputs that are useful when planning for the future of work and future skills.

## BACKCASTING

Backcasting works in the opposite direction in comparison to the other foresight methods. Instead of thinking about possible and probable futures based on trends in the present time, backcasting takes an explicitly normative approach by defining a preferable future state in a defined time horizon. From that future state, the organization works backward to determine the steps it should take to realize that desirable state, as pictured in Figure 3.<sup>43</sup> Organizations can adopt backcasting using the steps outlined in Table 2. These steps were adopted and adapted from multiple sources.<sup>44, 45, 46</sup>

**FIGURE 3**  
Backcasting



Source: Adapted from: Australian Government Department of Agriculture and Water Resources. (2015). *Strategic foresight for international trade in animals and animal products: Choosing a method to link foresight to policy advice*. <http://www.ajasn.com.au/wp-content/uploads/2019/02/Horizon-scanning-for-quads-Nov-2015.pdf>

**TABLE 2****Backcasting method**

<b>Step 1:</b> Determine objectives	<ul style="list-style-type: none"> <li>a) Describe the desired future state and make it as definitive as possible</li> <li>b) Determine the scope of analysis (temporal, spatial, jurisdictional, and substantive)</li> <li>c) If desired, create a baseline reference scenario to compare with the desired future state</li> </ul>
<b>Step 2:</b> Specify goals and targets	<ul style="list-style-type: none"> <li>a) Identify the goals and targets associated with the desired future state (i.e., what are the measurable targets and goals that the organization can look toward?)</li> </ul>
<b>Step 3:</b> Describe the present system	<ul style="list-style-type: none"> <li>a) Take an account of the present system using some of the previously described methods: horizon scanning, megatrends analysis, systems mapping, and forecasting</li> </ul>
<b>Step 4:</b> Describe the actions and solutions required	<ul style="list-style-type: none"> <li>a) Discuss the actions and solutions required to achieve the desired future state from the present moment (i.e., what are the yearly or quarterly goals?)</li> <li>b) Ensure that the actions and solutions are in line with the goals and targets, as well as the solutions identified in Step 2</li> <li>c) Be sure to address the structural constraints in the present system</li> </ul>
<b>Step 5:</b> Create an action plan	<ul style="list-style-type: none"> <li>a) Create an action plan to pursue the actions and solutions required to reach the desired future state</li> </ul>

**Scenario planning**

Scenario planning is a crucial method in the strategic foresight toolkit. Scenario planning is the construction of multiple narratives of the future. It often ties together research and the work from the other methods.<sup>47</sup>

The goal of scenario planning is not to predict the future. Instead, scenario planning is valuable both for the organizational learning that takes place during the *process* of developing scenarios and for the *outcome*, namely, the scenarios themselves (that is, the multiple articulations of the future).<sup>48</sup> The role of the strategic foresight practitioner is that of a

“futures midwife”<sup>49</sup>: the practitioner looks to support the process, nudge stakeholders into unexplored directions, and engage in challenging strategic conversations.<sup>50</sup> To do so, practitioners must invest effort in understanding the intended use (and users) of the scenarios and design activities to help stakeholders explore them in a structured way to understand key strategic questions and deep uncertainties.

The key to success is engagement with diverse internal and external perspectives through explorations of evidence-informed scenarios that contain the input of many participants through interviews or workshop participation. The engagement results in convergent and

divergent views on how an organization might strategically address each scenario, which can then inform strategic planning. It also creates a community of scenario learners who are able to reframe strategy, build social capital, and co-create value.

The process of scenario planning enables effective strategic conversation among multiple stakeholders and decision makers; it is a collaborative approach that brings together carefully curated stakeholders with various roles and expertise. Together, they examine conceptual futures that are created to answer strategic questions and to assist in reframing an organization's present strategy.<sup>51</sup> In this sense, all foresight exercises are about the present, because they render explicit the mental models of the organization; they reveal the implicit assumptions and blind spots that inform organizational decision making today and that impact the organization's resiliency to shocks and awareness of new opportunities.

The outcome of scenario planning is another source of value for organizations. Scenario planners gather evidence to inform the development of scenarios set in the near-, mid-, or long-term future, although rarely more than 10 years out. Evidence is drawn from authoritative reports, news articles, original interviews, and data or other documentation on industry, governmental, and societal issues. This method reduces a large amount of uncertainty to a handful of alternative directions that together contain the most relevant "deep uncertainties."<sup>52</sup>

## Box 1: The European Commission's Scenario planning exercise for the EU bioeconomy in 2050<sup>53</sup>

The scenario planning exercise focuses on examining the futures of the climate crisis, which will have massive impacts on the economy and the jobs of the future. The exercise looked to address the question "How can the EU bioeconomy best contribute to specific Sustainable Development Goals (SDGs) and the transition towards a climate-neutral economy by 2050?" Based on the main drivers of change (i.e., government policy and societal behaviours), four scenarios were created:

1. Do it for us: Policies are designed to achieve climate neutrality and meet SDGs, but society resists changes to their consumption habits.
2. Do it together: Both policy agendas and society are committed to achieve the goals of carbon-neutrality and the SDGs.
3. Do it ourselves: Policies fail to address the climate crisis and SDGs, resulting in a series of extreme climate events; societal response drives a change in business practices to adapt.
4. Do what is unavoidable: There is a lack of effort to address the climate crisis from both the policies and society; government is late to respond to crises.

The report then analyzes the effects of these four scenarios on the economy, on trade, sources of energy, the environment, and more. Each scenario will lead to a number of jobs of the future—requiring new skills—in a wide range of sectors and industries, including but not limited to sustainable food production and agriculture, green design, renewable energy, and low-emissions mobility and transport.



Strategic foresight practitioners make use of a common set of analytical categories to describe the different future scenarios: possible futures, probable futures, preferable futures, and plausible futures.<sup>54</sup>

## **POSSIBLE FUTURES**

An exploration of possible futures can be more speculative and wide-ranging. As futurist Wendell Bell remarks, “the possibility of going from A to B must exist in A, just a small seed must contain within it the possibilities for a giant tree if it is to become such in the future”.<sup>55</sup> The purpose of surveying possible futures is to provoke and challenge the conventional thinking of the present; examining the small seeds of possibilities can overcome the limitations of present imagination.<sup>56</sup>

## **PROBABLE FUTURES**

The study of probable futures looks to determine the most likely outcome of phenomena, contingent on the continuation of a specified set of conditions. Probable futures can be associated with forecasting methods.<sup>57</sup>

## **PREFERABLE FUTURES**

The study of preferable futures takes an explicitly normative orientation to the future, centring on the ethical dimension and on human desires and hopes. Preferable futures articulate a positive and desirable vision for the future—a future to strive toward (see Box 2 for an example).<sup>58</sup>

## **PLAUSIBLE FUTURES**

An exploration of plausible futures aims to nurture strategic conversations that bring new dynamics to the surface through scenarios that are logical yet contain elements of surprise. To stretch participants’ understandings of the contextual environment, effective scenarios should be plausible, challenging, memorable, and useful.<sup>59</sup>

### **Box 2: IFTF’s preferable future of work in California**

In 2021, the Institute for the Future (IFF) and the California Future of Work Commission released a vision for the future of work in California.<sup>60</sup> As part of an 18-month effort with numerous stakeholders, IFTF and the California Future of Work Commission describe five desirable goals for 2030 and the actions required to achieve them. The five 2030 desirable goals are:

1. Ensure there are jobs for everyone who wants work
2. Eliminate working poverty
3. Create a 21st century worker benefits model and safety net
4. Raise the standard and share of quality jobs
5. Future-proof California with jobs and skills to prepare for technology, climate, and other shocks

Throughout the decades of foresight research, various foresight practitioners have developed a variety of scenario planning approaches, such as the archetypal approach of futurist James Dator and the Manoa School,<sup>61</sup> Inayatullah’s Causal Layered Analysis (CLA),<sup>62</sup> and the 2x2 matrix approach.<sup>63</sup> The different approaches offer different frames of analysis that lead to various insights about the future.<sup>64</sup> This report offers an extended discussion of the commonly used 2x2 matrix method.

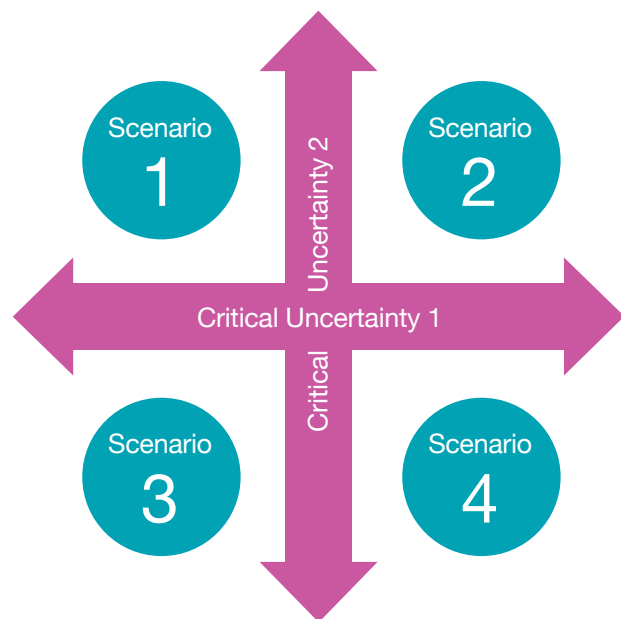
## 2X2 MATRIX METHOD

The 2x2 matrix method for building scenarios is one of the most popular methods in scenario planning. It was made popular in the 1990s after it was mentioned in *The Art of the Long View* by scenario planner Peter Schwartz.<sup>65</sup> The method focuses on a medium- or long-term future of a defined topic, such as the future of work. Organizations commission an internal or external scenario planning team to engage with key organizational leaders, multiple external stakeholders, and experts. The 2x2 technique involves multi-day workshops, preceded by significant preparatory work, including research and interviews.

Workshops identify driving forces affecting the topic and two critical uncertainties that influence the likelihood and impact of the four scenarios to be built. For each of the critical uncertainties, two general trajectories or outcomes are also articulated. After two critical uncertainties are chosen, one is placed on the x-axis (horizontal axis), and the other on the y-axis (vertical

axis). The two critical uncertainties cannot influence each other. From the two axes, four scenarios emerge, as shown in Figure 4.

**FIGURE 4**  
2x2 Matrix method

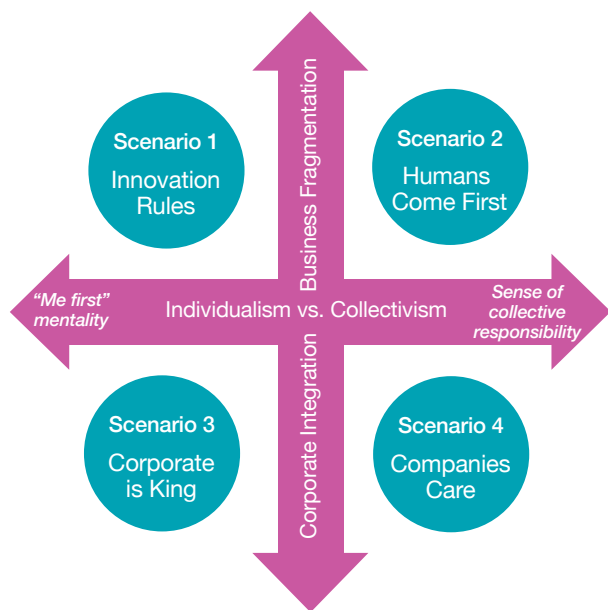


Source: Adapted from: Global Centre for Public Service Excellence. (2018). *Foresight manual: Empowered futures for the 2030 agenda*. [https://www.undp.org/sites/g/files/zskgke326/files/publications/UNDP\\_ForesightManual\\_2018.pdf](https://www.undp.org/sites/g/files/zskgke326/files/publications/UNDP_ForesightManual_2018.pdf)

There are a range of possible scenarios, given the flexibility of organizations and strategic foresight practitioners to choose the scope, timespan, and critical uncertainties and driving forces that are relevant to their context. Figure 5 below provides examples of projects that use the 2x2 matrix method on the topic of the future of work.

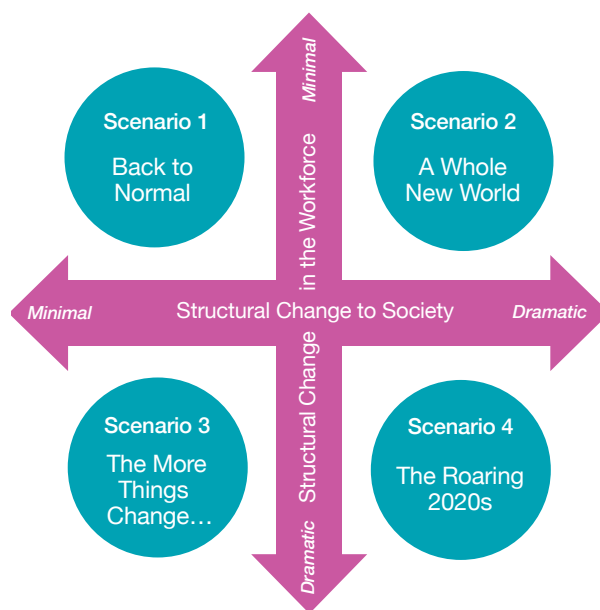
**FIGURE 5**  
Examples of 2x2 matrix method

**PwC matrix method**



Source: PwC. (2018). *Workforce of the future: The competing forces shaping 2030*. <https://www.pwc.com/gx/en/services/people-organisation/workforce-of-the-future/workforce-of-the-future-the-competing-forces-shaping-2030-pwc.pdf>

**Workforce Planning West matrix method**



Source: Workforce Planning West. (2021). *Workforce Planning West scenario planning project*. <https://workforceplanningboard.org/wp-content/uploads/2021/03/WPW-Scenario-Planning-Project.pdf>

**Next steps for readers**

The large number of methods elaborated in this section may seem daunting at first. Readers can look to incorporate some of these methods, initially piece-by-piece, into their research and strategic planning by referring to the report for additional guidance. Readers can also experiment with a full strategic foresight project that incorporates several of the methods and ties them together with several scenarios. The next section articulates some of the specific benefits of strategic foresight for stakeholders in the future of work.





# Conclusion: The Opportunities of Strategic Foresight for the Future of Work

Numerous converging, disruptive trends face stakeholders in planning for the future of work. Economic turbulence, geopolitical conflict, population health challenges, the climate emergency, socioeconomic inequities, and technological disruption will continue to influence discussions about the future of work. This report emphasizes the value of strategic foresight and its power to analyze, research, and inform policy and organizational strategy in TUNA conditions. Strategic foresight methods help stakeholders understand a range of potential futures to build more resilient, flexible, and adaptable governments, organizations, and individuals. Using strategic foresight, policymakers, employers (including small and medium-sized enterprises), job seekers, post-secondary institutions, and skills development and training ecosystem stakeholders can navigate uncertainty more regularly and effectively.

Strategic foresight is a valuable tool for policymakers to identify and address uncertainties, adding unique insights into policy areas requiring a long-term perspective that can help uncover creative policy options worthy of consideration. Indeed, strategic foresight is increasingly making inroads into policymaking. For instance, the European

Commission released the first of its annual Strategic Foresight Reports in late 2020. The European Commission writes that “strategic foresight will play a key role in helping future-proof EU policymaking by ensuring that short-term initiatives are grounded in a longer-term perspective.”<sup>66</sup> The report also states that the EU will mainstream foresight into policymaking in *all fields*. The Singapore government is also a champion of applying strategic foresight to its approach to policy analysis. The Singapore government uses strategic foresight, primarily scenario planning, to “anticipate change and stay relevant.”<sup>67</sup> It applies scenario planning in an integrated and decentralized way that is unique to national governments, supporting key strategic areas for the country this century, including higher education, skills, and training. This approach is seen to be one of the underpinnings of the country’s long-term success. Underscoring its importance, scenario planning is integral to the Singapore government’s yearly strategic planning and budgeting cycles.

At home, strategic foresight has also made inroads in Canadian policymaking. Policy Horizons Canada was established to conduct foresight and inform decision making in the federal government in the

context of an uncertain future and disruptive change.<sup>68</sup> Policy Horizons Canada can be a valuable resource for Canadian policymakers, both as a training resource<sup>69</sup> and in a consultative role. By leveraging its position within the federal government, Policy Horizons Canada can also partner with regional or local organizations and/or provincial, territorial, or municipal public servants to host workshops to build capacity and orient new users to strategic foresight. To the extent possible, governments are encouraged to disseminate their analysis to encourage learning and to add to ongoing strategic foresight conversations.

Strategic foresight is also valuable to employers and job seekers as they consider the future of work in their sectors and the future skills implications. Employers can create opportunities for staff to learn about and apply strategic foresight methods to



*With so many forces shaping the future of work and future skills, the ability to **stay resilient and plan strategically** is of paramount importance to employers, job seekers, policymakers, and students, among many other stakeholders.*

their work, especially in developing strategic plans and goals for the organization. While larger organizations can develop or contract a foresight team, smaller organizations and individual job seekers can refer to existing reports and foresight studies to capture glimpses into the future of work and identify skills development opportunities accordingly. For example, Policy Horizons Canada's 2019 report, *The Future of Work: Five Game Changers*, details five significant shifts that are affecting the future of work in Canada:<sup>70</sup>

1. Work shifting from time-based and long term to task-based and short term.
2. Automation and artificial intelligence eroding employment and causing unemployment even before it replaces entire jobs.
3. Artificial intelligence supplanting knowledge workers, which potentially enables jobless growth in knowledge industries.
4. Combined technologies leading to a decreased need for human intermediaries who provide trust and security services to facilitate agreements.
5. Improved teleworking technologies plus more online gig opportunities delinking where people live from where they work and earn income.

Based on the numerous strategic foresight reports about the future of work (see the Appendix for examples), employers can seek talent and develop internal training capabilities and skills development programs. Job seekers can proactively develop skills and prepare for shifts in the future of work.

Post-secondary educational institutions and players in the skills development and training ecosystem also have a role to play in building the capacity and skills to conduct strategic foresight. Colleges and universities can integrate strategic foresight into programs of study. Some universities in Canada are already offering strategic foresight programs and networking hubs, such as OCAD University and its Master of Design in Strategic Foresight and Innovation program,<sup>71</sup> Carleton University's The Practical Certificate in Strategic Foresight,<sup>72</sup> and McMaster University's Foresight Lab hosted in the DeGroote School of Business<sup>73</sup> and its Master of Public Policy in Digital Society Program, which trains "prospective policy leaders to navigate the rapidly changing dynamics of the technological landscape so as to more effectively address the complex social, political, and economic challenges that have accompanied the digital age."<sup>74</sup> Organizations in the skills development and training ecosystem can use strategic foresight to navigate the future of work and better address the skills training needs of the workforce. Organizations can follow the example of eCampusOntario, which is experimenting with strategic foresight in their work. In their *2021-2024 Strategic Plan: Digital by Design*, one of their strategic themes is to support "system-wide collaboration for global future-focused leadership" (p. 16), and the organization hopes to do so by promoting "foresight research capabilities and knowledge exchange systems" (p. 17).<sup>75</sup> eCampusOntario has released reports informed by strategic foresight research on lifelong learning,<sup>76</sup> building a hybrid campus,<sup>77</sup> and shaping a future workforce.<sup>78</sup>

Post-secondary institutions and other organizations in the skills development and training ecosystem are also well-positioned to popularize strategic foresight among a wide variety of stakeholders (for example, government, community organizations, students, etc.) in innovative ways. For instance, post-secondary institutions and other organizations could host one- or two-day intensive events or competitions where participants can apply strategic foresight methods to an issue with which they are grappling.

With so many forces shaping the future of work and future skills, the ability to stay resilient and plan strategically is of paramount importance to employers, job seekers, policymakers, and students, among many other stakeholders. Strategic foresight offers an approach to shape strategic planning so that actions taken will be based on thoughtful consideration of a wide array of plausible, probable, and preferable futures. Given its many benefits and broad applicability to a wide range of stakeholders, strategic foresight provides the tools to help plan when the future is difficult to predict.





# Appendix

## Foresight research in Ontario, Canada, and the world

Organization	Foresight Research Group/Unit/ Initiative	Relevant Foresight Research Related to Future of Work
Organization for Economic Co-operation and Development (OECD)	<p><b>Strategic Foresight Unit:</b> This unit was established in 2013 and exists to increase the use and impact of strategic foresight in OECD policy expertise and policymaking by governments.</p>	<p><b><u>Using Strategic Foresight Methods to Anticipate and Prepare for the Jobs-Scarce Economy:</u></b> This paper shows recent examples of global foresight that have been developed by the OECD.</p>
World Economic Forum	<p><b>Preparing for the Future of Work Initiative:</b> This initiative aims to promote a positive and proactive approach to navigating the future employment and skills landscape. Some of the work uses foresight approaches.</p>	<p><b><u>Eight Futures of Work:</u></b> This is a white paper based on scenario analysis. The paper presents various possible visions of what the future of work might look like by the year 2030.</p>
International Labor Organization	<p><b>The Future of Work initiative:</b> This initiative was launched in 2015. Under this initiative, the “Major Trends in the Future of Work” page highlights trends that are expected to affect the future of work. These are not necessarily identified through foresight research.</p>	<p><b><u>Skills Technology Foresight Guide:</u></b> A tool for the identification of future skills needs, this guide presents a step-by-step implementation of the skills technology foresight (STF) process, its methodology, and the main tools for preparing, conducting and applying the results of STF.</p>
Millennium Project: Global Futures Studies and Research	<p><b>The Millennium Project</b> is a global participatory think tank established in 1996 under the American Council for the United Nations University. It became independent in 2009 and has grown to 67 nodes around the world.</p>	<p><b><u>Work/Technology 2050: Scenarios and Actions:</u></b> This report is based on a three-year international study that produced three detailed scenarios, conducted 30 national workshops in 29 countries, and identified hundreds of action distilled to 93 that were assessed by hundreds of futurists and related experts in over 50 countries.</p>

Policy Horizons Canada	<b>Policy Horizons Canada</b> is a government organization that conducts foresight to help the Government of Canada develop future-oriented policy and programs that are more robust and resilient in the face of disruptive change.	<b><u>The Future of Work: Five Game Changers</u></b> : This report explores five key game changers for the future of work and their policy implications.
eCampusOntario	<b>eCampusOntario</b> is a provincially-funded non-profit organization. It leads a consortium of the province’s publicly-funded colleges, universities, and Indigenous institutes to develop and test online learning tools to advance the use of education technology and digital learning environments.	<b><u>The Hybrid Futures</u></b> : This report examines the hybrid campus, which could use educational technology along with wraparound learning supports in an innovative way.  <b><u>Lifelong Learning</u></b> : This report investigates the concept of lifelong learning and its integration into one’s life and career through varied learning environments (in-person, online, and hybrid).
City of Calgary	<b>The City of Calgary</b> , under the Resilience Calgary strategy, uses strategic foresight to prepare for the future and develop resiliency and preparedness.	n/a
Government Office for Science, U.K.	<b>Futures team</b> : This team supports embedding futures tools and techniques across the U.K. Civil Service to support policymaking. The team provides capability development programs, networks, resources, advice service, and projects.	<b><u>Future of Skills and Lifelong Learning</u></b> : This is a foresight report looking at the barriers to skills and lifelong learning in the U.K. This paper summarizes independent evidence papers, some of which use trend analysis.
Institute for the Future (IFTF), U.S.	<b>Institute for the Future</b> is a U.S.- based think tank that has decades of experience with foresight research. The institute works with businesses, governments, and social impact organizations to produce research and foresight training.	<b><u>The Future of Work and Its Impact on Health</u></b> : This is foresight research that examines how the changing nature of work is influencing the health of individuals and families in California into the next decade.  <b><u>Work, Interrupted: The New Labor Economics of Platforms</u></b> : This report takes a worker-centric perspective on the transition to the networked digital platform economy and its effects on labour and the workplace.  <b><u>AI Forces Shaping Work &amp; Learning in 2030: Report on Expert Convenings for a New Work + Learn Future</u></b> : This report looks at the transformative potential of technologies and the effects on the working and learning environment, using the time horizon of 2030.

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Saïd Business School, Oxford University, U.K.

**Saïd Business School** has extensive experience in scenario planning, and its researchers developed the [Oxford Scenario Planning Approach](#). The school also offers a five-day, fee-based program for individuals and teams called [Oxford Scenarios Programme](#).

***The Oxford Scenario Planning Approach in the Era of COVID-19***: While this report is not exclusively on the future of work, it provides insights into how to do scenario planning to prepare for the aftermath of the COVID-19 pandemic and address the unfolding crisis. As such, this also applies to scenario planning for the future of work.

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Nesta, U.K.

Nesta is an innovation foundation based in the U.K. that works on projects around the world.

**Futurescoping** is one of Nesta's research areas. They use horizon scanning, speculative design, data mapping, and scenarios to explore trends, technologies, and early signals of change to identify the drivers shaping the future.

***The Future of Skills: Trends Impacting on US and UK Employment in 2030***:

This study identified major global trends, or drivers of change, that have important implications for the future of work and skills.

***The Future of Skills: Employment in 2030***: This study is based on the trends identified above and combines them with machine learning and foresight workshop to map out how employment is likely to change in the future. It also anticipates a number of new occupations.

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## Learning resources

- > The OECD has a [Strategic Foresight Unit](#) that supports OECD and government policymaking. Their reports are published online.
- > [Strategic Reframing: The Oxford Scenario Planning Approach](#) is a book by Rafael Ramírez and Angela Wilkinson, which forms the foundation of the Oxford Scenarios Programme.
- > Policy Horizons Canada, a dedicated governmental foresight organization, which has published numerous [foresight resources](#), including learning modules and videos on pressing topics.
- > The U.K. government's Foresight and Horizon Scanning program has prepared a [futures toolkit](#).
- > In terms of global trends, the World Economic Forum issues an annual Global Risks Report ([2022 version](#)). The U.S. National Intelligence Council publishes a Global Trends report every four years ([Global Trends 2040](#)). The International Labour Organization publishes an annual World Employment and Social Outlook report ([2022 update](#)).

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