State of Equity, Diversity, and Inclusion within Canada's Science, Technology, and Innovation Ecosystem

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Key messages:

- Representation is variable across groups and across aspects of the science, technology, and innovation ecosystem
- Broader conceptions of innovation can better recognize the contributions of equity-deserving groups
- The federal government and other actors have introduced programs and policies that have improved the participation of women and equity-deserving groups
- A lack of disaggregated data impedes efforts to understand the state of EDI in the science, technology, and innovation ecosystem
- The data that exists suggests that women, persons with disabilities, and Indigenous researchers are less successful in securing research funding relative to male and racialized researchers

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State of Equity, Diversity, and Inclusion (EDI) within Canada's Science, Technology, and Innovation (STI) Ecosystem

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The Diversity Institute conducts and co-ordinates multidisciplinary, 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 equity-deserving groups, leading practices to effect change, and producing concrete results.

Executive Summary

Introduction

Research highlights the importance of integrating gender and diversity analyses to ensure science, technology, and innovation (STI) ecosystems attract top talent, foster scientific excellence, and drive effective commercialization and innovation. STI ecosystems are complex systems characterized by dynamic interactions among institutional players, including government, firms, universities, and intermediaries. The interactions among these players—at macro (societal), meso (organizational), and micro (individual) levels—can either advance or hinder equity, diversity, and inclusion (EDI), shaping opportunities for equity-deserving groups. At the same time, implementing effective EDI strategies is essential for maintaining a high-functioning STI ecosystem.

This report reviews available data on the representation and participation of people belonging to equity-deserving groups within different elements of the STI ecosystem, including post-secondary science, technology, engineering and mathematics (STEM) programs, industry, and professional functions.

Using the International Standards Organization (ISO) framework, which provides guidelines for integrating diversity and inclusion into organizational systems, this report applies a gender and diversity lens to the assumptions, policies, processes, and stakeholders that shape the STI ecosystem. The framework distinguishes between three key dimensions: representation, participation, and leadership. By identifying barriers and enablers to inclusion and innovation, this report provides recommendations for fostering a more equitable, diverse, and inclusive STI ecosystem.

The state of equity, diversity, and inclusion in Canada’s science technology and innovation ecosystem

Representation of equity-deserving groups in science, technology, and innovation

Diversity refers to differences in demographic characteristics and includes gender, race, age, and many other dimensions of identity. For the purposes of this study, we focus on women, Indigenous Peoples, racialized people (including those who are Black), persons with disabilities and those who identify as part of the 2SLGBTQ+ community, while also considering issues facing people living in rural communities as well as newcomers and immigrants. Equity, as recognized in Canadian legislative frameworks, considers historic experiences of discrimination and disadvantage and focuses on ways to level the playing field to ensure fairness. Inclusion is both a process and a goal and refers to a state where people are valued, respected, and have a sense of belonging.[1]

The representation of these equity-deserving groups in the STI ecosystem has improved over time, yet inequities persist at all levels. Through the education system, for example, women, Indigenous Peoples, and members of other equity-deserving groups are under-represented in many STEM disciplines, in senior academic roles, administrative roles. and in access to research funding. Notably, in some universities, more than 30% of engineering students are women, while in others it is less than 15%, suggesting differences in priorities, policies and processes have an impact.

Talent or human capital remains the foundation of the technology sector and while demand fluctuates, shortages remain. Some groups have higher levels of representation in the technology sector than in the population, including racialized individuals (33.1%) and persons identifying as 2SLGBTQI+ (9.9%). Similarly, immigrants, who make up 23% of the population, account for 37% of scientific research and development (R&D) workers, with high representation in other scientific and technological fields such as chemistry (57%), software engineering and design (55%), and engineering (43%). However, disparities remain. A survey of 62,528 employees across 149 employers found that women (38.6%), Indigenous Peoples (0.8%), and persons with disabilities (5.2%) are significantly under-represented in the technology sector compared to their proportions in the general population (50.83%, 5%, and 24.1%, respectively). Disparities also vary within subsectors. For example, Indigenous Peoples are better represented in the Environmental and Clean Tech sector (6%) compared to the overall workforce (4%).

In engineering, a discipline which drives advances in STI, women's representation has increased over the past 30 years, yet they still comprise only 15% of engineering professionals and 20.2% of newly licensed engineers as of 2022. Women entrepreneurs are majority owners of 20% of all businesses in Canada. While gaining ground, they tend to be under-represented in technology intensive sectors, although they have strong potential. Women make essential contributions to Canada's top five global ranking in FemTech – an industry focused on technology-driven solutions for women's health.

Enhancing intellectual property (IP) frameworks to support diverse innovators is key to improving Canada's ability to translate innovation into economic success – an area where the country has struggled. In Canada, men outnumber women by 7 to 1 as applicants for patents. There is also increasing recognition of the need to protect Indigenous cultural assets, with communities advocating IP protections.

[1] Terminology is the subject of much discussion. For one guide see SSHRC (2024) Best practices in equity, diversity and inclusion in research practice and design. https://sshrc-crsh.canada.ca/funding-financement/nfrf-fnfr/edi-eng.aspx#3

Expanding opportunities for equity-deserving groups is critical for addressing Canada's labour shortages in science and technology, where over 320,000 workers are expected to retire in the next decade. However, addressing systemic barriers – such as wage disparities, racism, discrimination, and biases rooted in traditionally male-dominated workplace environments – is equally important. Data also highlights persistent gaps in access to research funding, career advancement, and progression into faculty and leadership roles, particularly for women, Indigenous Peoples, and persons with disabilities.

Gender and diversity in the science, technology, and innovation ecosystem

Understanding EDI in the STI ecosystem extends beyond counting the representation of different population segments. It requires applying a gender and diversity lens to the basic assumptions, policies, processes, and organizations that comprise the ecosystem to uncover potential biases and barriers. Discussions about innovation often focus on science and technology – the creation of new knowledge, technologies, and tools – along with the associated disciplines of STEM. In these fields, equity-deserving groups are often under-represented because of disciplinary and occupational segregation. A strong and effective STI ecosystem must also consider commercialization and adoption processes – without which there is no true innovation. This principle was well understood, for example, in the development of GE3LS, Canada's genomics programs, which included environmental, economic, ethical, legal, and social research. Advancing commercialization and adoption require expertise from across multiple disciplines – business, law, ethics, policy, psychology, and more – to address the complex processes. These disciplines have better representation of equity-deserving groups and so as we deepen our understanding of the STI system and our definition of innovation we advance inclusion.

The definition of innovation also extends beyond economic goals to include social and environmental objectives. While Canada has committed to the United Nations Sustainable Development Goals (SDGs) – which address environmental sustainability, health, and other priorities – the country's STI ecosystem remains primarily focused on economic outcomes and traditional performance metrics. Others, such as the OECD, advocate for a broader understanding of impact and indicators. Moving beyond conventional indicators allows for better understanding of rural innovation and the contributions of women, Indigenous Peoples, and other equity-deserving groups.

While the issues of representation and diversity are important, it is essential to be attentive to the ways in which our assumptions may embed bias and have unintended consequences. By applying a gender and diversity lens across all aspects of the ecosystem, we can better understand what is needed to build a robust, inclusive, and high-performing STI ecosystem.

Effective strategies to enhance equity, diversity, and inclusion in the science, technology, and innovation ecosystem

Inclusive innovation ecosystems embed a gender and diversity perspective into their structure, policies, processes, and core components. They promote inclusive governance and emphasize interactions among key elements, including framework conditions (institutional regulations, culture, infrastructure, and demand), systemic factors (networks, leadership, funding, talent, knowledge creation, and support services), entrepreneurial outcomes (startups, high-growth enterprises, and entrepreneurial employee initiatives), and broader impacts (productivity, employment, income, and contributions to the SDGs). Applying a gender and diversity lens to each element helps identify barriers and uncover potential enablers at every level of the innovation ecosystem.

Inclusive government policy and program development

Government policies play a critical role in shaping the STI ecosystem. The assumptions, priorities, and programs underpinning these policies profoundly impact equity-deserving groups. A structured, systemic approach to policy development – focused on removing barriers and strengthening enabling conditions – is vital for progress.

Traditional research approaches can embed and perpetuate biases, limiting their impact on diverse communities. Recognizing this, Canada's Tri-Council agencies have taken extensive steps to integrate EDI principles into research processes – including research methods, data collection, community engagement, and knowledge mobilization. University-industry collaborations need to actively involve researchers from equity-deserving groups through increased representation and social support across fields of study.

Advancing EDI in STI also requires inclusive financing, procurement, and infrastructure development. Equity-deserving groups encounter barriers in securing grants, loans, and investments due to biases in traditional credit assessment models – despite targeted financing programs. For example, women-led businesses receive only 4% of venture capital funding.

STI infrastructure encompasses physical, digital, and organizational systems that support innovation systems. The COVID-19 pandemic exposed a digital divide, affecting rural and remote communities as well as urban populations facing affordability challenges. With the rapid advancement of technologies, such as Artificial Intelligence (AI), addressing barriers related to digital infrastructure like high-speed internet, affordability, and digital skills is critical to enable broader participation in STI activities.

Promoting equity in R&D and methodologies ensures diverse populations benefit from research outcomes and broadens perspectives. Inclusive research requires stakeholder engagement throughout the research cycle. These include the responsible research and innovation approach –

adopted by Europe’s Horizon program – the "nothing about us without us" research principle, the ethical do no harm approach, and community-based participatory research.

Investing in STI infrastructure, particularly in digital access for rural and remote communities, is critical for fostering equitable participation. Although Canada has progressed with initiatives like the Tri-Agency EDI Action Plan, gaps in accountability frameworks and institutional reporting persist. Establishing inclusive governance frameworks, such as gender and diversity focused policies, can further reduce systemic barriers and enhance inclusive R&D.

Embedding equity, diversity, and inclusion across the innovation lifecycle

A strategic approach to advancing an inclusive innovation ecosystem requires carefully designed interventions throughout the innovation lifecycle, targeting human capital, financing and support, procurement, and commercialization.

Enhancing human capital and skills is crucial for advancing EDI in the STI ecosystem. Human capital – the skills, knowledge, and experience in the labour force – empowers equity-deserving groups, broadens participation, and fosters equitable opportunities for innovation.

The STI ecosystem and innovation lifecycle is financed through diverse sources and stages, including federal programs, industry contributions, and financing tools.

Commercializing innovation is essential for creating social and economic value but typically prioritizes technology-driven innovation, while often neglecting market-driven needs, consumer behaviour, regulatory and standards issues, adoption processes, and organizational change.

Standards are a cornerstone of the innovation process, guiding interoperability, safety, quality, and market access, fostering stakeholder trust and streamlining processes. Poorly designed standards can hinder progress and reinforce inequalities. As a response, organizations like the ISO and the Standards Council of Canada (SCC) have begun strategically implementing gender representation and expertise requirements in the standardization process and extending inclusive design standards to enhance accessibility for diverse groups.

Interventions are needed in governance structures, policies, financing, and procurement to promote inclusive and collaborative innovation. Traditional “lab-to-market” models do not reflect the current dynamic nature of innovation. The iterative, networked nature of innovation often neglects user engagement and community inputs until the final stages of development, risking irrelevance and failing to meet diverse needs.

Inclusive governance structures ensure equitable participation and decision-making in STI ecosystems. However, defining governance in this context presents challenges – particularly in identifying key elements and assessing whether governing bodies adequately reflect EDI considerations. To overcome these challenges, stakeholders in the STI ecosystem must rethink and redesign their governance structures by committing to accountability, power sharing, co-creation, and collaborative approaches.

Conclusions and Key Findings

1. **EDI is critical to a well-functioning STI ecosystem.** It is not simply a matter of access to talent but also of ensuring reliable scientific research, well-designed technological solutions, and effective adoption processes that drive innovation. EDI is essential for merit and excellence.
2. **While progress has been made, under-representation and a lack of diversity remain in segments of the STI ecosystem.** Despite thirty-five years of effort, women in STEM continue to face barriers. While racialized people and immigrants are over-represented in some parts of the STI ecosystem, many still face pay gaps and discrimination. Persons with disabilities and Indigenous people remain under-represented.
3. **The research ecosystem, a strong foundation for innovation, is characterized by systemic inequities.** For example, men (44%) and racialized persons (44%) are most successful in receiving research funding in Canada, while only 40% of women, 38% of persons with disabilities and 37% of Indigenous researchers secure research funding.
4. **Innovation is more than technology and scientific inventions**. Adoption is critical to innovation and requires a broader understanding than STEM disciplines alone provide. Additionally, international organizations stress the importance of defining innovation more inclusively—to encompass product, process, and market innovation. When the definitions are more inclusive, the contributions of innovators from equity-deserving groups and rural communities are recognized.
5. **Canada's rural areas need specialized policies to boost innovation**. While rural entrepreneurs may not invest heavily in R&D, they are significant for transforming operations with technology and developing innovative products and processes. However, existing definitions and approaches often exclude them.
6. **STI indicators must be expanded to enhance inclusion**. Traditional STI indicators rely heavily on R&D expenditures, scientific publications, and types of GDP shares such as business expenditure on R&D, higher-education expenditure on R&D and government expenditure on R&D. However, for the STI ecosystem to become more inclusive, indicators that measure broader value creation, such as contributions to SDGs, income and wealth distribution in urban and rural areas, and Indigenous innovation activities, are essential.
7. **Effective strategies to enhance equity and inclusion in the STI should follow a whole-of-government approach**. The Canadian government and several actors in the ecosystem on societal and organizational levels have introduced programs and policies that have significantly advanced the participation of women and equity-deserving groups. However, more work needs to be done to coordinate these efforts.
8. **The lack of disaggregated data poses significant limitations on measuring EDI in the STI ecosystem**. Statistics Canada, research institutes, and other organizations that measure diversity in STI areas must continue to collect disaggregated data to adequately capture the participation and contributions of women and equity-deserving groups.

Introduction

Science, technology, and innovation (STI) ecosystems are complex systems characterized by dynamic interactions among various players, including governments, firms, universities, and intermediaries. These ecosystems are supported by activities, resources, and relationships that evolve in institutional frameworks (Bassis & Armelini, 2018; Budisa & Wieden, n.d.; Chatti et al., 2024; Granstrand & Holgersson, 2019; Granstrand & Holgersson, 2020). STI ecosystems operate at multiple levels: at the macro or societal level, they encompass infrastructure, government policies and programs, cultural attitudes, and national research and development strategies. The meso or organizational level includes educational and financial institutions, venture capitalists, angel investors, large corporations, incubators, and accelerators. At the micro or individual level, they are shaped by the education, skills, and knowledge possessed by those participating in them.

Recent scholarly work underscores the critical importance of integrating gender and diversity analyses to understand how STI ecosystems can either support or marginalize equity-deserving groups—including women, Indigenous Peoples, persons with disabilities, racialized individuals, Black people, members of the 2SLGBTQ+ community, and immigrants (Chavatzia, 2017; Palid et al., 2023; Schiebinger, 2021; Tannenbaum et al., 2019). The under-representation of these groups has been shown to adversely affect the quality and effectiveness of STI ecosystems (Government of Canada, 2024; Hofstra et al., 2020). Equity-deserving groups continue to face significant barriers to participation in Canada's STI ecosystem, including limited access to funding, mentorship, and opportunities for career advancement (CRCC, 2024; Cukier et al., 2022; Diversity Institute, 2023).

The absence of an equity, diversity, and inclusion (EDI) perspective in research and development (R&D) can lead to products and systems that inadvertently disadvantage or harm users. For example, motor vehicle safety systems have historically been designed using crash test dummies modelled on average male physiques, resulting in higher injury risks for women during collisions (Vanella, 2023). Similarly, COVID-19 vaccination strategies sometimes failed to effectively reach at-risk populations, such as racial and ethnic minorities, due to a lack of consideration of factors like vaccine hesitancy and limited access to healthcare services (Bayati et al., 2022; Newman et al., 2023). Historically, biomedical research has been male-centric, leading to a lack of understanding of sex-based differences in disease development and treatment outcomes (Merone et al., 2022). Only 50% of medical interventions studied report sex-disaggregated data, hindering the development of effective treatments tailored to women's needs and leaving room for necessary innovation (Ellingrud et al., 2024). Additionally, studies from Switzerland and the United States have identified biases in technology systems such as voice recognition, which often struggles to recognize women's voices accurately, and facial recognition technologies, which demonstrate lower accuracy for individuals with darker skin tones (Birhane, 2022; Kathiresan et al., 2022; Martin & Wright, 2023). These examples underscore the critical need for inclusive design practices that consider the diverse characteristics of all user groups to ensure equitable and effective technological solutions.

Research highlights that, despite advancements, significant inequalities persist in the participation of equity-deserving groups across all stages of the STI ecosystem. In science, technology, engineering and mathematics (STEM), and information and communications technology (ICT), members of equity-deserving groups face multiple barriers to participation. These barriers have significant effects including occupational segregation, which contributes to wage gaps, a lack of diversity in management positions, and lower rates of entrepreneurship (Thébaud & Charles, 2018). Yet, human capital drives an organization's capacity to innovate. Diverse teams excel at solving complex problems and delivering unique insights (Hepburn, 2021). For example, diverse organizations are 87% more likely to make effective decisions and 75% faster at bringing products to market, highlighting the direct link between diversity and organizational success (Korn Ferry, n.d.).

Similarly, systemic structures in the research enterprise, which underpins innovation, perpetuate inequities, as evidenced in research conducted in the US (Roberts et al., 2020; Chen et al., 2022). Disciplinary segregation is a prominent issue, with equity-deserving groups often excluded or under-represented in STEM disciplines (Kamalumpundi et al., 2024). Both overt and implicit bias further compounds these disparities (Beroíza-Valenzuela & Salas-Guzmán, 2024; Mugo & Puplampu, 2022).

A critical issue in the STI ecosystem with profound implications for EDI is the tendency to overlook non-STEM disciplines critical to innovation processes. Without adoption, there is no innovation. As seen with many major innovations—from genomics to vaccinations to AI—insufficient attention to policy, regulation, ethics, organizational behaviour, psychology, and more can impede progress. This was well understood with the launch of the early genomics research efforts, which prioritized genomic environmental, economic, ethical, legal, and social research (GE3LS) (Hogarth, 2008). While interdisciplinary work across research councils has been encouraged, a singular focus on STEM has limited impact and effectiveness while excluding equity-deserving groups under-represented in STEM fields.

Moreover, the OECD and Eurostat (2018) have long argued for broadening the definition of innovation to include products, processes, marketing, and organizational advancements. The OECD, for example, defines innovation as "a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)." Similarly, the World Economic Forum (WEF) defines it as "the process of turning new ideas into value, in the form of products, services, business models, and other new ways of doing things. It is complex and goes beyond mere creativity and invention to include the practical steps necessary for facilitating adoption" (World Economic Forum, n.d.).

However, Canada’s STI ecosystem often emphasizes technology creation and commercialization, undervaluing other forms of innovation (Council of Canadian Academies, 2018; Gellatly & Gu, 2024; Government of Canada, 2014). Metrics like R&D expenditures exacerbate this issue by overemphasizing technology-centric contributions and overlooking the critical roles played by equity-deserving groups.

These definitions matter. Women, Indigenous Peoples, and racialized owners of small and medium-sized enterprises (SMEs) are more likely to engage in product, marketing, and organizational innovations than others (Statistics Canada, 2024), but their contributions are often not recognized. Similarly, members of equity-deserving groups play a critical role in technology adoption—a crucial aspect of the STI ecosystem often overshadowed by the strong focus on invention and STEM.

To address the persistent disparities in the STI ecosystem, we need to move beyond the focus on representation and participation to understand how a gender and diversity lens can provide insights into all aspects of the system–from basic definitions and assumptions to policies and practices as well as measures of impact. Without such measures, equity-deserving groups will continue to face barriers to full participation. This is not merely an issue of access to talent (Davies et al., 2021) but of the strength and impact of the entire system. This report uses the framework of the International Standards Organization (ISO) for representation, participation, and leadership. Representation, or having a seat at the table, refers to the diverse composition of the ecosystem with people from equity-deserving groups. Participation, or having a voice at the table, refers to the level of inclusion and influence of equity-deserving groups within the ecosystem. Leadership, or being the head of the table, refers to members of equity-deserving groups actively leading the work in the ecosystem (Diversity Institute, 2023).

This report explores the systemic inequities, structural barriers, and untapped opportunities in Canada’s STI ecosystem. Through a comprehensive analysis of the current state of EDI and effective strategies for improvement, it offers actionable insights to foster a more inclusive innovation landscape. By addressing these challenges, Canada can turn its innovation paradox into a dynamic ecosystem that drives economic growth, societal progress, and global leadership in science and technology.

This report is divided into two main sections:

- **The State of Equity, Diversity, and Inclusion in Canada’s Science, Technology, and Innovation Ecosystem**
  This section presents data on the representation of equity-deserving groups in STI fields, examines trends over time, and explores systemic barriers, including funding disparities and institutional biases. It also highlights the need to broaden the definition of innovation

beyond science and technology inventions and emphasizes the importance of more comprehensive and intersectional data collection.

- **Effective Strategies for Enhancing Equity, Diversity, and Inclusion in Canada's Science, Technology, and Innovation Ecosystem**
  This section analyzes policies, programs, and practices aimed at improving EDI. It synthesizes this analysis to identify successful initiatives and provide actionable recommendations to address systemic inequities, foster inclusion, and enhance Canada's STI ecosystem.

The State of Equity, Diversity, and Inclusion in Canada's Science, Technology, and Innovation Ecosystem

This section examines the state of EDI in Canada's STI ecosystem in two parts. Part one analyzes the presence and participation of equity-deserving groups across three key areas. It begins by exploring post-secondary education, focusing on enrollment trends in STEM disciplines, barriers to access, and challenges in retention. It then examines faculty and research, highlighting disparities in faculty representation, research funding allocation, and systemic biases that hinder career advancement. Finally, it assesses workforce and leadership, addressing under-representation in STI-related industries and the barriers equity-deserving groups face in career progression.

Part two moves beyond representation to examine the broader structural factors that shape STI innovation and participation. It explores how gender and diversity influence innovation definitions, structures, policies, and funding mechanisms. It also discusses barriers in entrepreneurship and commercialization, including the under-representation of women and racialized individuals in leadership roles and venture funding. Additionally, it examines sectoral and regional biases that shape innovation ecosystems, often privileging high-tech industries and urban centers while overlooking contributions from rural and community-driven initiatives.

Finally, the section calls for the expansion of innovation indicators to reflect diverse contributions beyond traditional metrics such as patents and R&D spending, advocating for inclusive frameworks that incorporate social, environmental, and community-driven innovations.

Representation of equity-deserving groups in science, technology, and innovation

Canada's population is becoming increasingly diverse. Women comprise 47% of the labour force, while Indigenous Peoples account for 4%, racialized individuals 35%, persons with disabilities 27%, and immigrants—many of whom are racialized—28% (Statistics Canada, 2025a, 2025b, 2025c, 2023a, 2023b). Additionally, 4.4% of Canadians aged 15 and older identify as 2SLGBTQ+ (Statistics Canada 2024d). This report examines representation in STI sector across three key domains: 1) Education, particularly in STEM disciplines, which serve as important talent pipelines; 2) Post-secondary faculty members and researchers, who shape the direction of STI through teaching, mentorship, and research; 3) Workforce and leadership, including employees and decision-makers in key sectors.

Post-secondary education

Over the past decade, university enrollment among women has increased from 568,365 to 610,953, although their overall proportion has slightly declined from 57.4% to 56.8% (See Table 1). In STEM fields, the number of women has grown significantly, rising from 98,442 in the 2012/2013 academic year to 145,194 in 2022/2023, with their overall representation increasing from 39.4% to 41.8%.

Growth in representation was largely driven by gains in science and science technology programs, which added 23,406 more women, increasing enrollment from 74,637 to 98,043. Engineering and engineering technology also saw substantial growth, with the number of women rising by 10,734 from 15,042 to 25,776. Additionally, mathematics and computer science enrollments more than doubled, increasing by 12,612 from 8,763 to 21,375. In contrast, enrollment in non-STEM fields remained relatively stable, with a slight decline of 3,756 students. This suggests that the overall growth in women's university enrollment over the past decade has been driven solely by increased participation in STEM disciplines.

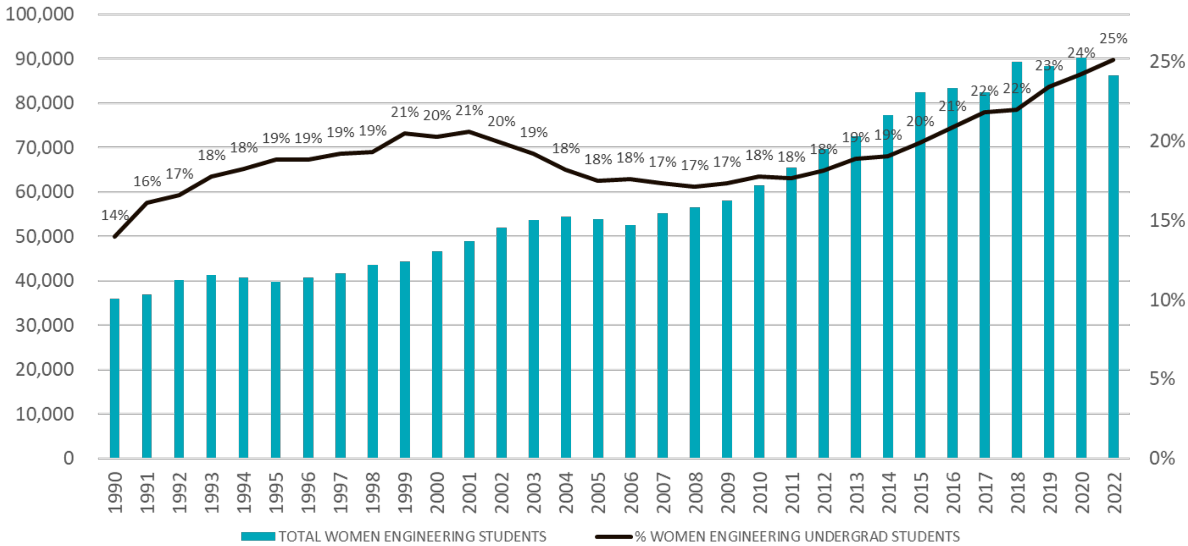
Table 1. First-year representation of women in STEM and non-STEM university programs

	2012/2013		2022/2023	
	Number of first-year students	Proportion of students who are women	Number of first-year students	Proportion of students who are women
All fields	568,365	57.4%	610,953	56.8%
STEM (total)	98,442	39.4%	145,194	41.8%
Science and science technology	74,637	55.3%	98,043	60.6%
Engineering and engineering technology	15,042	18.5%	25,776	24.5%
Mathematics and computer science	8,763	26.2%	21,375	26.7%
Non-STEM	468,888	63.5%	465,132	63.9%

Source: Statistics Canada. (2024). *Table 37-10-0163-01 Post-secondary enrolments, by International Standard Classification of Education, institution type, classification of instructional programs, STEM and BHASE groupings, status of student in Canada, age group and gender*. https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3710016301

While progress has been made in increasing the representation of women in engineering (see Figure 1), significant variations exist among institutions. Some universities have more than 30% of women enrolled in engineering programs, while others have half that proportion. This disparity suggests that institutional differences in intentionality, policies, and programs play a critical role in shaping women's participation in engineering (Cukier et. al., 2025)

Figure 1: Women's representation among engineering undergraduate enrolments at Canadian universities 1990 – 2022 (% and total women)



Source: Cukier, W. Broughton, S. Noshiravani, R., Perruzza, S., Weissling, L., Ike, D. (2025) *More Than just numbers revisited: Progress on women in engineering since 1992*. Diversity Institute, Ontario Society of Professional Engineers, Future Skills Centre.
https://www.torontomu.ca/diversity/reports/more_than_just_numbers/

Although the proportion of women enrolled in STEM fields in Canada is slowly increasing, they remain under-represented in engineering, mathematics, and computer science (Cukier, et al., 2024; MacLatchy & Ghose, 2024). The chronic under-representation of women in STEM, combined with the "leaky pipeline" between high school, university, and labour force entry, is stifling the number of skilled technical workers in high-demand fields and ultimately weakening Canada's innovation and scientific capacity (Wall, 2019). Gender disparities persist at every stage of the educational and professional journey, from the number of enrolments in post-secondary studies, to the number of graduates, and the number of women that continue to work within their field after professional certification and licensing.

Post-secondary enrolment rates show that 42.4% of all STEM students belonged to racialized groups from 2021 to 2022 (Statistics Canada, 2024). The largest share of students were from Asian ethnicities (South Asian, Chinese, Filipino, Southeast Asian, Korean, and Japanese), followed by Black, Arab, and Latin American populations. The majority of these students were concentrated in undergraduate studies (70.2%), followed by technical or professional training diploma studies (11.3%), graduate studies (5.4%), doctoral studies (3.3%), and other educational qualifications

(6.7%). Notably, South Asian ethnicities (East Indian, Pakistani, Sri Lankan) and Chinese students had higher enrolment in university-level degrees (i.e., undergraduate, masters, and PhD programs). Applying an intersectional lens, non-racialized women had a 29% higher enrolment rate in STEM disciplines compared to racialized women. Consistent with women's greater tendency to pursue work related to the environment, they were more likely to be enrolled in biosystem engineering studies across all university-level degree types than other engineering disciplines (Engineers Canada, 2023).

Gendered perceptions of subject matter and pedagogy often reinforce stereotypes, influencing girls to gravitate away from STEM subjects from an early age (Whitford, 2022). Surveys indicate that an overwhelming number of women report an unsupportive educational environment that discourages them from pursuing STEM fields (OSPE, 2018). As a result, despite strong academic performance in STEM subjects, women are 30% less likely to enroll in these fields than men (Chan et al., 2021).

In academia, biases such as microaggressions and stereotypical assumptions about technical abilities create additional barriers for women, Indigenous Peoples, Black and racialized persons navigating post-secondary institutions as students and faculty members. Retention is also an issue – post-secondary institutions must evolve to meet diverse population needs and STI demands. For example, Indigenous Peoples face significant barriers to completion, being half as likely to graduate from post-secondary institutions as their non-Indigenous counterparts (Melvin, 2023).

Coordinated efforts to combat discrimination, address biases, and dismantle systemic barriers are essential. Curricula and pedagogy must adopt an EDI lens to increase participation of equity-deserving groups in STEM and highlight diverse role models, such as women entrepreneurs, to inspire learners (Sim et al., 2024). Notably, entrepreneurship and innovation textbooks often lack representation of equity-deserving groups and non-tech entrepreneurs, underscoring the need for inclusive materials (Kolavalli, 2022).

Addressing gaps in mentoring, coaching, and experiential learning is also critical. These efforts equip individuals with the skills and networks needed for success in STI (Nkrumah & Scott, 2022). Additionally, post-secondary education must be supplemented with upskilling, reskilling, and employment pathways. The skilled trades, increasingly vital to STI, require strategies to develop innovation and entrepreneurial skills, including digital and financial literacy, business planning, and entrepreneurial mindsets (Kreiterling, 2023). Post-secondary institutions must build the competencies – knowledge, skills, and attitudes – needed for diverse groups to thrive in STEM and the STI ecosystem.

However, skills gaps persist in research commercialization, entrepreneurship, and business acumen. Addressing these challenges requires improved support systems, mentoring, coaching, and experiential learning to equip members of equity-deserving groups with practical skills and networks, thus strengthening the innovation ecosystem.

Improving access to bridging and pathway programs for skills recognition and transferability is also essential, particularly for those with foreign education or experience in STEM. More flexible credential assessment processes can help address skills underutilization, a prevalent issue among immigrant populations, and harness their talent more effectively (ESDC & IRCC, 2018; Hou, 2019).

Faculty and research

Post-secondary institutions, research funders, and members of the scientific community constitute important actors in creating an equitable research and innovation environment, including supporting the next generation of innovators (CCA, 2024). According to the most recent Statistics Canada data from 2019, non-racialized individuals held 80% of university professor, instructor, teacher, or researcher positions, while racialized individuals accounted for 19.4%. Individuals identifying as 2SLGBTQ+ made up 8.5% of these positions, followed by those with a self-reported disability at 6.7% and Indigenous Peoples at just 2% (Statistics Canada, 2020) (see Table 2).

Table 2. Representation of demographic groups in post-secondary faculty and researchers by role in Canada (2019)

	Role			
	University professor, instructor, teacher, or researcher	College professor, instructor, teacher, or researcher	Postdoctoral fellow	PhD Student
Men	51.0%	50.0%	58.0%	47.0%
Women	48.0%	50.0%	41.0%	52.0%
Racialized (men & women)	19.4%	13.6%	50.0%	39.0%
Indigenous (men & women)	2.0%	2.2%	-	1.7%
2SLGBTQI+	8.5%	5.4%	6.3%	14.1%
Persons with disabilities (men & women)	6.7%	7.1%	4.8%	10.4%

Source: Statistics Canada (2022f).

The following data from Statistics Canada provides further insights into the representation of post-secondary faculty engaged in research, broken down by equity-deserving identities (Table 3). However, due to confidentiality requirements under the Statistics Act, data on faculty conducting research identifying as Indigenous, gender diverse, or persons with disabilities was not disclosed.

Instead, the reported figures reflect the share of individuals who do not belong to these groups (Statistics Canada, 2020).

The proportion of women and men engaging in academic or applied research as members of post-secondary faculty or researchers was similar, with men leading by four percentage points. On average, around a third (31%) identified as belonging to at least two equity-deserving groups and data on postdoctoral fellows and PhD students revealed that they were the most likely to have at least two intersecting equity-deserving identities (33% for postdoctoral fellows and 43% of PhD students) compared to 28% across all college and university faculty (Statistics Canada, 2020).

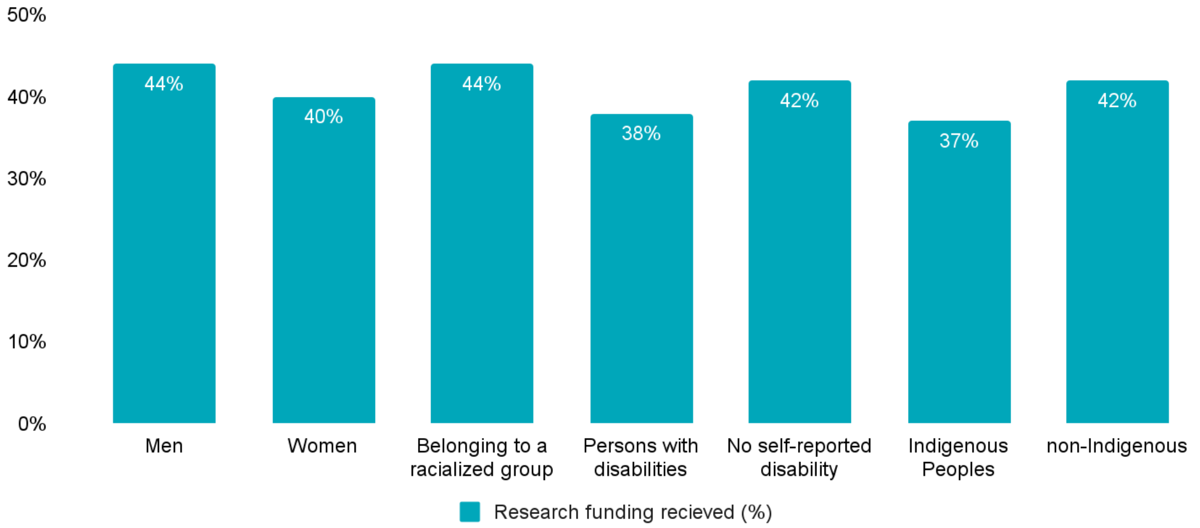
Table 3. Demographic compositions of post-secondary faculty and researchers involved in an academic or applied research project role in Canada (2019)

Demographic Group	Proportion involved in an academic or applied research project (permanent and contract)
Men	34.0%
Women	30.0%
Racialized (men & women)	41.0%
Non-Indigenous Peoples	33.0%
Has no self-reported disability	32.0%
Belonging to at least two diversity groups	31.0%

Source: Statistics Canada (2020b)

Disbursement of funding for research activities can provide insights into the equitable allocation of research sponsorships. According to data from the latest Financial Information on Universities and Colleges (FIUC) survey, an aggregation of financial data of 106 universities and affiliated colleges in Canada, Canadian universities and colleges allocated a total of 27% or $8.1 billion of total revenues exclusively for research in 2022 to 2023 (CAUBO, 2024). The most recent data detailing the allocation of research funding by demographic group from 2019 indicates that men and racialized people were more likely to be recipients (44%) than women (40%). Persons with disabilities (38%) and Indigenous Peoples (37%) were less likely to be a recipient of funding than faculty and researchers without a self-reported disability (42%) and non-Indigenous individuals (42%) (Statistics Canada, 2020) (see Figure 2).

Figure 2. Proportion of post-secondary research funding allocated to faculty and researchers by demographic group (2019)



Source: Statistics Canada. (2020a).

Embedded bias and discrimination across institutions maintain inequalities in the research enterprise. There is a prevalent gender pay gap in the field, with women professors earning, on average, 10% less than their male counterparts for equal work (Smith-Carrier et al., 2021), and women are more likely to leave academia altogether (Casad et al., 2020). Furthermore, discipline segregation (e.g., under-representation of women, Black, and Indigenous scholars in STEM) can limit access to necessary resources, recognition, and support. Canada's Tri-Council—the three federal research funding agencies: the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC), and the Canadian Institutes of Health Research (CIHR) – has implemented policies that have led to progress in inclusion within the research enterprise at many institutions. However, the processes, allocation of resources and reward systems are still fraught, and bias is embedded across institutions. Issues include racism, unconscious biases, CV and accent bias, affinity bias and precarious work, white normativity, and tokenism against Black and diverse academics (Mugo & Puplampu, 2022). Despite increased focus and awareness, the academic workforce lacks diversity, with equity-deserving populations often concentrated in lower ranks or precarious positions (CAUT, 2018).

Employees in the science, technology, engineering, and math sectors

Canada has a growing need for additional workers to sustain its science and technology sector, as over 320,000 workers are over the age of 55 and approaching retirement within the next decade (IRCC, 2024). Immigration has become an increasingly important source for maintaining and growing this workforce. Over a third of individuals working in scientific R&D are foreign-born (37%), and approximately 1.4 million immigrants working in Canada are trained in STEM (IRCC, 2024). Additionally, immigrants are overrepresented in particular scientific and technological professions, including computer programmers (35%), physicists and astronomers (42%), engineers

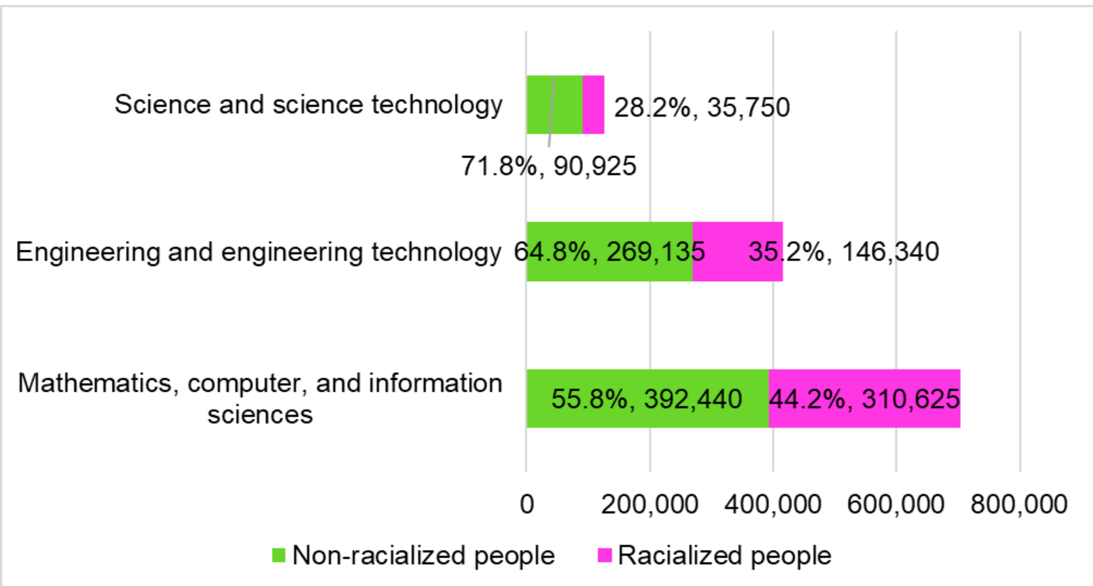
(43%), software engineers and designers (55%), and chemists (57%). Despite making up only a quarter of Canada's workforce, immigrants play a critical role in the present and future of scientific research and development (IRCC, 2024).

Although recent data suggests that the number of equity-deserving employees in the technology sector has increased, some groups–particularly immigrants, Indigenous Peoples, and racialized persons–continue to be under-represented (TAP Network, 2024). A survey with 181 employers in the technology sector found that racialized and Black people, and persons identifying as 2SLGBTQ+, are overrepresented in these companies (33.1% and 9.9%, respectively). However, women (38.6%), Indigenous Peoples (0.8%), and persons with disabilities (5.2%) remain significantly under-represented (TAP Network, 2024).

The ICT sector is Canada's most significant contributor to private-sector R&D, accounting for 45% of all R&D expenditures ($14.1 billion) (ISED, 2023). While the representation of equity-deserving groups in the ICT workforce has been increasing, apart from newcomers, most groups remain under-represented (Ivus, 2020).

The following data highlights the representation of racialized people and generational immigration status across STEM fields in Canada for 2021. Engagement of racialized people varied across STEM fields. The lowest representation of racialize people was in science and science technology (28.2%), and engineering and engineering technology (35.2%). In contrast, mathematics, computer science, and information sciences had the highest representation (44.2%) (see Figure 3). Across all three categories, racialized individuals remained under-represented compared to their non-racialized counterparts.

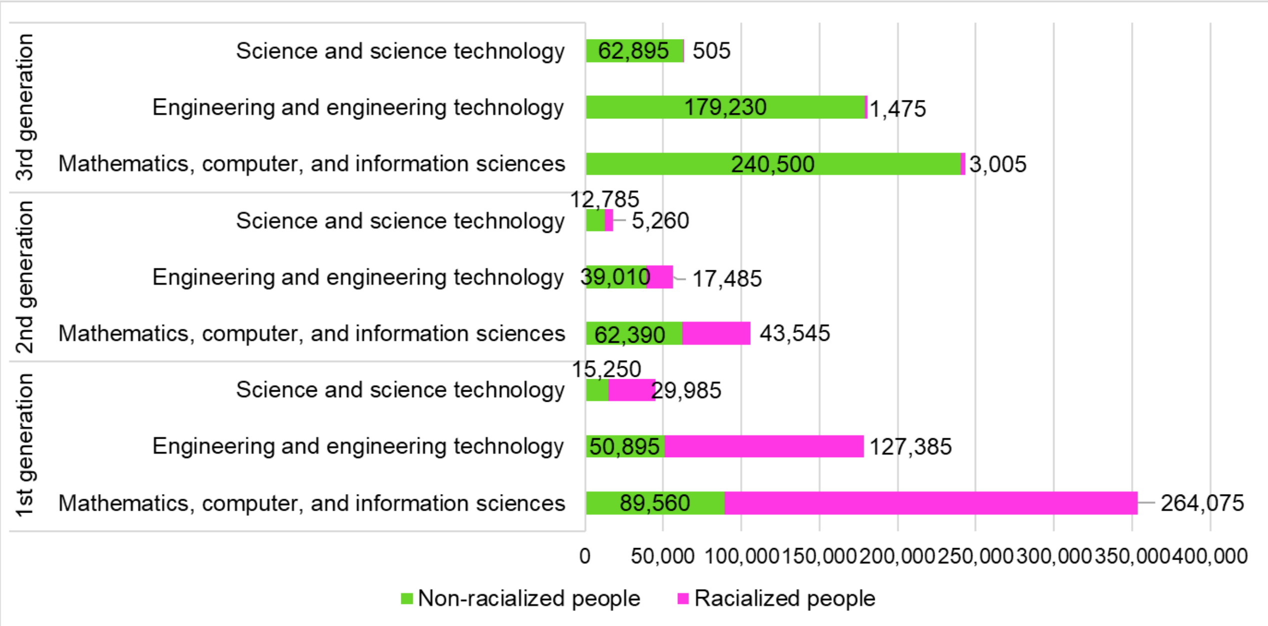
Figure 3. STEM occupations, 2021



Source: Statistics Canada. (2022). Table 98-10-0454-01 Occupation (STEM and non-STEM) by visible minority, generation status, age, and gender: Canada, provinces and territories, census metropolitan areas, and census agglomerations with part. https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=9810045401

Census data (see Figure 4) also reveals a significant decline in STEM participation among racialized individuals across generations subsequent to immigration. Racialized individuals born outside Canada are far more likely to enter STEM fields than racialized Canadians raised by non-immigrant parents. Conversely, non-racialized individuals initially have lower representation in STEM than first-generation Canadians, but their participation increases substantially by the third generation.

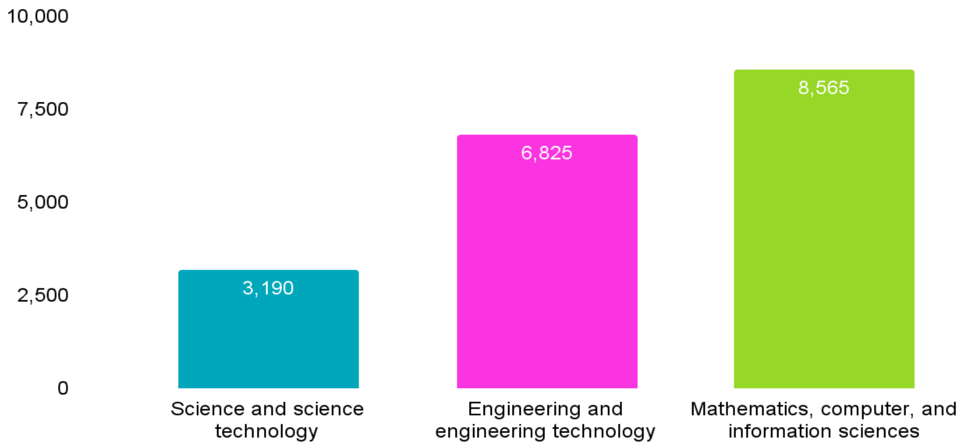
Figure 4. STEM occupations by generation of immigration, 2021



Source: Statistics Canada. (2022). Table 98-10-0454-01 Occupation (STEM and non-STEM) by visible minority, generation status, age and gender: Canada, provinces and territories, census metropolitan areas and census agglomerations with part. https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=9810045401

Indigenous Peoples are noticeably under-represented in STEM occupations in Canada (see Figure 5). Census data from 2021 shows that while Indigenous Peoples make up 4% of the labour force, they hold only 1.5% of STEM occupations (Statistics Canada, 2025a, 2025b, 2025c, 2023a, 2023b). Indigenous representation is highest in science and science technology (2.5%), followed by engineering and engineering technology (1.6%). The representation of Indigenous Peoples is lowest in mathematics, computer, and information sciences (1.2%) (Statistics Canada, 2023a, 2023b). Persistent under-representation highlights systemic barriers to access and participation in STEM fields for Indigenous communities.

Figure 5. STEM occupations, Indigenous Peoples, 2021



Source: Statistics Canada. (2023). Table 98-10-0589-01 Occupation (STEM and non-STEM) by industry sectors, Indigenous identity, employment income statistics, occupation (training, education, experience and responsibility category - TEER), age and gender: Canada, provinces and territories. https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=9810058901

While representation data provides valuable insights into EDI in post-secondary education, faculty research, and technology sector employment, it has limitations. For example, TAP Network data does not differentiate Black persons from other racialized groups despite the specific challenges posed by anti-Black racism. Representation data for 2SLGBTQ+ technology workers may be underestimated, as individuals in these groups often choose not to self-identify in heteronormative and cisnormative workplaces to avoid potential hiring biases (Sears et al., 2021). Indeed, workplace harassment remains a significant issue, with 35% of 2SLGBTQ+ individuals experiencing harassment at work (QueerTech, 2024).

Pathways to employment: The engineering profession

Engineering is a critical discipline and profession that drives advances in STI. While extensive data exists on the representation of women in engineering, mainly stemming from a landmark 1992 Canadian Committee on Women in Engineering study, research on other equity-deserving groups remains scarce. This study first revealed the significant under-representation of women in engineering and pay disparities, highlighting systemic barriers in the field.

Although men continue to outnumber women in engineering both in Canada and globally, data suggests that the share of women studying engineering is gradually increasing as the field becomes more accessible and socially accepted for women to pursue. However, gaps persist between education and employment. Women account for 34% of Canadians with a STEM degree but represent only 23% of the country's STEM workforce, compared to 43% in the European Union (GUS Canada, 2023). The gap is even more pronounced in engineering. In 2022, women comprised 25.2% of all undergraduate engineering students, 20.2% of newly licensed engineers, and only

15% of engineering professionals working in Canada (Engineers Canada, 2023). While this marks an improvement from 1992 when only 3.2% of licensed engineers were women, undergraduate enrollment has only increased by 11% since 1990, and the proportion of women as licensed engineers has grown by just 11.8% over the past three decades (see Table 4).

Gender disparities in engineering remain prevalent and, in some cases, worsen with age. In 2022, women represented only 15% of engineers in Canada, despite incremental growth from 3.2% in 1990. Employment outcomes also reflect persistent gaps. In Ontario, for example, 21% of all engineering graduates are women, yet only 22% work in engineering occupations, compared to 31% of male graduates (OSPE, 2024). Additionally, women engineers face higher rates of underemployment (38%) compared to men (32%), with this gap widening for women aged 45 to 64 across all STEM professions (OSPE, 2024). These figures highlight the ongoing barriers to workforce integration for women in engineering despite increased educational participation.

Table 4. Women registered as professional engineers in Canada, 1990 and 2022

Year	Total Engineers	Women Engineers	% Women
1990	121,464	3,875	3.2%
2022	319,023	47,941	15%

Source: Canadian Committee on Women in Engineering. (1992); Statistics Canada. (2022)

Furthermore, gendered income disparities have worsened over time, with the wage gap widening significantly. In 1989, the gap stood at $1,939, but by 2021, it had increased to $21,600 – a difference of $18,081 when adjusted for inflation (see Table 5) (CCWE, 1992; Statistics Canada, 2022).

Table 5: Average income of engineering graduates, 1989 and 2021

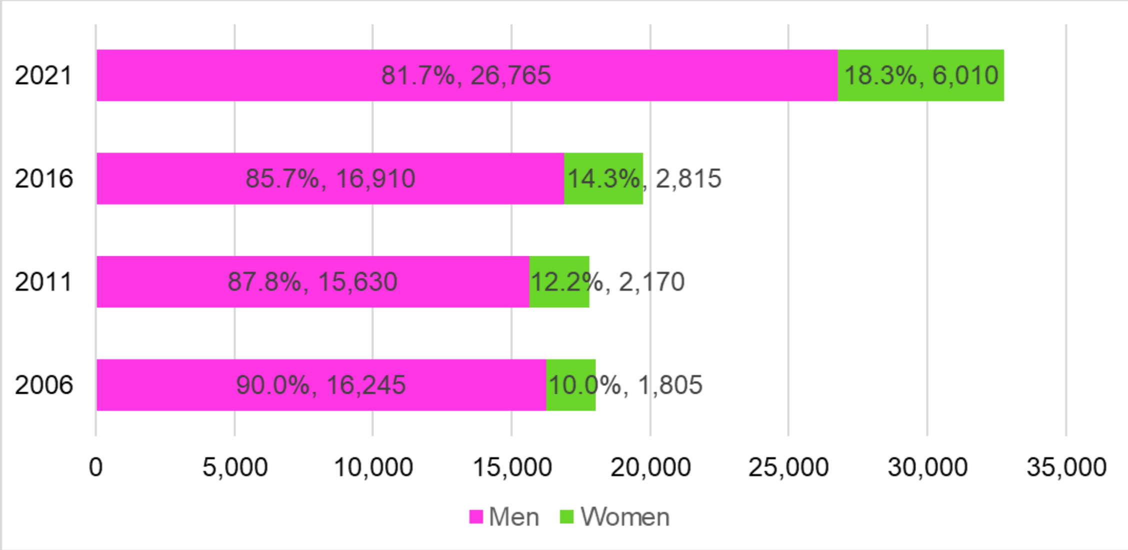
Engineering graduates	1989 (Men)	1989 (Women)	2021 (Men)	2021 (Women)
Annual income	48,353	46,414	88,100	66,500
Women's income as a percentage of men's income		96%		75.5%

Source: Canadian Committee on Women in Engineering. (1992); Statistics Canada. (2022)

Significant challenges persist for women working in engineering, contributing to a "leaky pipeline" that hinders their retention and advancement in the field. Recent research highlights ongoing barriers, including toxic workplace culture, which stems from traditionally masculine work environments and gender biases that affect performance assessments, remuneration, and parental leave support (Engineers Canada, 2024).

Furthermore, women remain under-represented in executive and managerial positions in engineering firms. As a result, there are limited role models to inspire other women and girls, and there is a lack of leadership to address workplace bias. Since 2006, the percentage of women engineers in managerial roles has increased by eight percentage points, reaching 18% in 2022 (see Figure 6) (Statistics Canada, 2006; Statistics Canada, 2022).

Figure 6. Professional engineers in manager job level responsibility, by gender, 2006-2021



Source: Statistics Canada (2006, 2011, 2016, 2022)

Intellectual property and patenting activity

As of 2020, 15% of all SMEs in Canada held IP protections. Intellectual property ownership was highest among majority women-owned SMEs (19.4%) and jointly owned SMEs (14.9%), whereas SMEs majority-owned by men (14.7%) and racialized individuals (14.4%) were close to the national average. In contrast, persons with disabilities (11.1%) and Indigenous Peoples (7.2%) held significantly lower IP ownership rates (Statistics Canada, 2020). While this speaks to SMEs, the average number of patent applications by men-owned enterprises grew by 50% from 2001 to 2019 versus 18% for women-owned enterprises across all business sizes (see Table 6) (CIPO, 2023). Propensity for IP specifically amongst women-owned SMEs may be higher compared to larger businesses owned by women due to higher rates of ownership and a larger presence as SMEs. In 2020, women had a majority ownership (greater or equal to 51%) or higher ownership share in 17% of Canadian SMEs (Statistics Canada, 2022). Patent applications do not all necessarily translate into IP ownership yet is indicative of R&D and patent-related activity required to generate IP and patents.

Table 6. Average number of patent applications, by gender of ownership, 2001 to 2019

	Men-owned	Women-owned	Equally owned	Total
2001-2005	837	89	62	988
2006-2010	816	74	91	981
2011-2015	1,121	114	98	1,333
2016-2019	1,258	106	87	1,451
Change between 2001 and 2005, and 2016 and 2019 (%)	50%	18%	40%	47%

Source: Canadian Intellectual Property Office. (2023).

Overall, men inventors are predominantly the ones listed on patent applications. In 2023, women inventors made up only 17.7% of those named in international patent applications, according to WIPO (WIPO, 2023). Strategies such as the IP and Gender Action Plan promote equitable support for women's careers in IP-related fields. While women inventors named on Patent Cooperation Treaty (PCT) applications from Canada grew by 377% compared to 285% for men inventors during 1997 to 2015, men continue to have a greater share of patent applications (ISED, 2017). Within Canada, men outnumber women as inventors listed on patent applications originating in the country by a factor of 7 to 1 and only 1% of majority women-owned businesses owned patents domestically or internationally (CIPO, 2023). The gender gap did not narrow from 2001 to 2019 – patent application rates of men-owned businesses are disproportionately higher, ranging from 9:1 to 12:1 compared to women-owned businesses, much higher than their overall ratio by sheer number of businesses (4:1) (CIPO, 2023).

Compared to male inventors, women inventors tend to be younger, a larger percentage of them are immigrants, and they are more likely to engage in collaborative parenting or "co-patenting" (Mtonga-Clare & Lafrance-Cooke, 2024). While business characteristics including business size (number of employees), age, capital stock, and export propensity are similar between men- and women-owned businesses engaging in patent activity, men-owned businesses engage in R&D at 1.4 times the rate of women-owned businesses, with R&D investments being 70% higher (CIPO, 2023). This disparity in R&D activity contributes to faster growth and higher number of patent applications among men-owned businesses (Abbes, Lafrance-Cooke, & Leung, 2023).

There is increasing recognition of the need to protect Indigenous cultural assets, as their traditional knowledge and innovations have often been undervalued or misappropriated. In response, Indigenous communities, local governments, and organizations are advocating for intellectual property protections for traditional knowledge and cultural expressions. Understanding how members of each equity-deserving group can uniquely contribute to IP and patent generation, advancing collaborative innovation and knowledge creation can further help Canada unlock the untapped potential of all diverse groups.

Representation in environmental and clean technology

Canada's transition to net-zero emissions by 2050 has spurred innovation and job growth in the environmental and clean technology (ECT) sector. However, many equity-deserving groups remain under-represented in the ECT sector, as well as in other sectors essential for achieving net-zero goals. A survey of employer green workforce characteristics found that among 35,917 environmental workers, only 3% were persons with disabilities, 6% were racialized individuals, and 5% identified as Indigenous Peoples (Eco Canada, 2023). However, Innovation, Science and Economic Development Canada (ISED, 2022) reported a slightly higher share of Indigenous Peoples at 6% of the ECT workforce. Indigenous Peoples make up a larger share of the workers in the environmental and green sector compared to their overall labour force representation (4%), while racialized persons and persons with disabilities were significantly under-represented.

Indigenous communities play a crucial role in clean energy development. First Nations, Métis, and Inuit groups are partners or co-leads in approximately 20% of Canada's electricity-generating infrastructure, nearly all comprising renewable energy projects (Indigenous Clean Energy & Canadian Institute for Climate Choices, 2022). Indigenous communities have contributed significantly to renewable green technology innovation by integrating traditional ecological knowledge with advanced technologies in developing renewable energy projects, such as bioenergy plants, microgrids, wind farms, and solar power (Barberstock, 2024).

According to Statistics Canada, women have the highest representation in the ECT sector from all other equity-deserving groups, comprising 28.6% of the workforce in 2021 and were more concentrated in service-related jobs than goods production (Gueye, 2024). While men continue to dominate the sector in sheer numbers, the number of women in ECT jobs has been increasing slightly faster, showing a gradual upward trend (Gueye, 2024).

The ownership of SMEs in the ECT sector is notably less diverse compared to SMEs in other industries, despite the innovative and competitive advantages demonstrated by firms led by equity-deserving individuals. SMEs specializing in clean technology are less likely to be majority-owned by women or racialized persons (Jian, 2023).

There are also barriers to entry in the sector, as clean technology SMEs are disproportionately owned by individuals with post-secondary education – 79% have at least a college degree. Despite demonstrating higher education levels, women and racialized entrepreneurs are still under-represented as clean technology SME owners (ISED, 2022). Women-led companies, in general, are more likely to engage in environmental entrepreneurship and value creation and have been found to outperform male-led firms in reaching environmental goals (Hechavarría et al., 2017; Wang & Yu, 2019). However, women represent only 13% of firm owners in clean technology despite making up 28.6% of the ECT workforce (Gueye, 2024; Jian, 2023). Women are also under-represented in technical and executive roles in clean technology companies (NRCan, 2023). This gap exists despite women in the sector being nearly twice as likely as men to have a university degree or higher (41.1% vs. 24.2%) (Gueye, 2024).

Moreover, research indicates an efficiency gap. Women-led green technology startups are fewer, yet they consistently achieve higher returns on investment (ROI) compared to male-led startups. This highlights the untapped potential of women-led businesses in driving sustainable innovation (Gueye, 2024; Sinha & Lebec, 2023).

Beyond the clean technology sector, other related fields, such as biotechnology, exhibit both progress and persistent gaps regarding EDI. Canadian Biotechnology firms have increasingly had EDI principles within their organizations through initiatives like BioTalent Canada's I.D.E.A.L. program, which recognizes progressive bioscience organizations fostering inclusive workplace cultures through diversified hiring, gender-balanced leadership, and Indigenous engagement (BioTalent Canada, 2025). Despite these efforts, men comprise 60% of biotechnology employees (Blair, 2024). Engagement of equity-deserving groups in the sector continues to lag; women make up 34% of workers in Canada's bio-economy (Blair, 2024; BioTalent Canada, 2024) and occupy a significantly smaller fraction of executive and board positions in bio- and life science firms (Shift Health, 2023). Recent immigrants make up 9% of employees in the sector, while racialized individuals represent 20% of biotechnology employees. However, Indigenous Peoples and persons with disabilities remain severely under-represented, each comprising only 1% of the workforce (Blair, 2024; Business Wire, 2024).

As Canada's bio-economy is projected to require 65,000 additional workers by 2029, attracting and retaining diverse talent is crucial. However, low awareness of career opportunities and workforce retention challenges remain barriers (BioTalent Canada, 2025). The need for diverse talent pools is particularly critical, as nearly 70% of biotech firms focus on R&D, and 83% operate with fewer than five employees (BioTalent Canada, 2024).

Although recent trends indicate some progress in diversity within STEM and the ECT sector, women and members of other equity-deserving groups remain significantly under-represented in both technical and leadership roles across academia and industry (Anderson et al., 2022; Carter et al., 2019; Ghiasi et al., 2015; Hango, 2013; Women and Gender Equality Canada, n.d.). However, these groups are often well-represented in disciplines like policy, law, ethics, organizational behaviour, and consumer behaviour, which are critical for understanding broader social contexts and driving the adoption of innovations. Moreover, recognizing the diversity of markets and target populations is crucial for fostering effective, equitable, and inclusive innovation adoption strategies. The following section discusses innovation beyond science and technology creation, including other types of innovation, technology adoption, and the implications for EDI in the STI ecosystem.

Gender and diversity in the science, technology, and innovation ecosystem

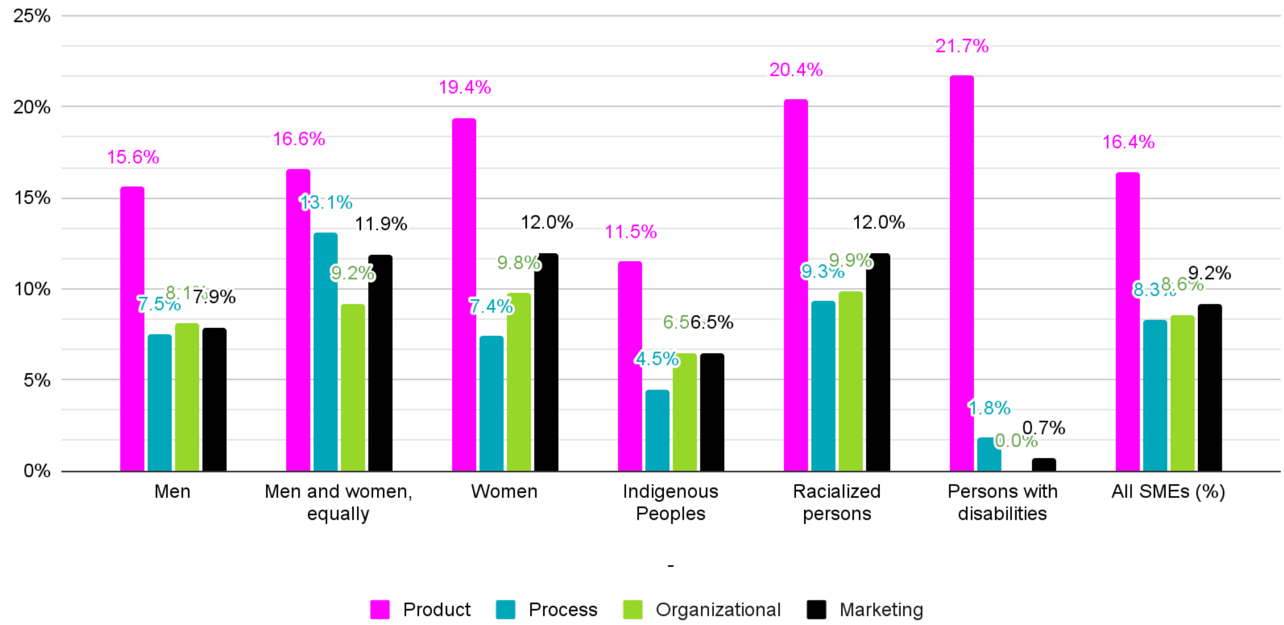
Introduction

Innovation is often framed through the lens of STEM disciplines, given their crucial role in technological advancement. However, an overemphasis on STEM can create barriers to broader STI goals and exclude equity-deserving groups that remain under-represented in these fields. Global definitions of innovation extend beyond technology and economics to include societal impact and adoption processes, highlighting the need for a more inclusive approach.

Despite systemic barriers, equity-deserving groups contribute significantly to various forms of innovation, including product, process, organizational, and marketing innovation, which are all specified in the Oslo Manual: Guidelines for Collecting, Reporting and Using Data on Innovation (2018). According to the manual, innovation encompasses product, process, organizational, and marketing improvements, many of which may be enabled by science and technology. A broader view of innovation also recognizes contributions from equity-deserving groups and rural innovators—many contribute significantly to productivity and sustainability yet are overlooked or undervalued. Research shows that women are more likely than men to engage in product, organizational, and marketing innovation, while racialized-owned firms excel in process innovation. Meanwhile, small, and medium-sized enterprises (SMEs) owned by persons with disabilities outperform all other groups in product innovation relative to the number of such businesses. Furthermore, propensity to innovate was found to be higher amongst SMEs majority owned by women and racialized persons compared to men.

Studies indicate that women and racialized entrepreneurs are more likely to engage in product, organizational, and marketing innovation compared to men (see Figure 7). Furthermore, racialized individuals exhibit a higher rate of process innovation, while women show near-equal participation. Notably, SMEs co-owned by men and women outperform men-majority-owned SMEs across all innovation types. Persons with disabilities also excel in product innovation, yet their overall participation in different forms of innovation remains significantly lower.

Figure 7. Product, process, organizational and marketing innovations of small and medium-sized enterprises' innovations by demographic group, Canada, 2018 to 2020



Source: (Statistics Canada, 2024)

Immigrant-owned SMEs show a higher likelihood of integrating product, process, or marketing innovations compared to those owned by Canadian-born entrepreneurs. The rates of organizational innovation are similar between both groups, but recent immigrants are more likely to use patents, possibly due to their higher STEM education levels (Picot & Ostrovsky, 2020; Picot & Ostrovsky, 2021).

Innovation propensity varies across demographics. Statistics Canada found that businesses that are majority-owned by racialized people (35.8%) and majority-owned by women (30.5%) reported higher innovation rates than businesses that are majority-owned by men (see Table 7). However, traditional innovation metrics often fail to capture these contributions, limiting the recognition of equity-deserving groups in the innovation ecosystem. Broadening innovation frameworks to account for these diverse contributions is essential for achieving equitable and comprehensive STI goals.

Table 7. Distribution of SMEs by majority owner and innovation propensity

	Indigenous Peoples	Racialized persons	Persons with disabilities	Women	Men	All SMEs
Innovation propensity	21.6%	35.8%	23.6%	30.5%	27.0%	28.4%

Source: Statistics Canada. (2020)

The often-narrow focus on invention and technological innovations also limits the understanding and approaches to intellectual property (IP) frameworks. A thriving IP and patent generating landscape benefits from increased participation across diverse demographic groups to fuel creativity and drive problem-solving. Strengthening IP rights through frameworks that support diverse innovators can enhance Canada's ability to translate innovation into IP generation. The Canadian Intellectual Property Office (CIPO), The House of Commons Standing Committee on Science and Research and other organizations have highlighted that bridging gender and diversity gaps in IP and patent activity is essential for building a robust and inclusive innovation ecosystem (ISED, 2023; House of Commons, 2023).

Importance of technology adoption and interdisciplinary contributions

Discussions about innovation often centre on science and technology, prioritizing the creation of new knowledge, technologies, and tools within STEM disciplines. However, innovation is not solely about invention – it is about "doing differently." Within this context, adoption is key, as it involves integrating innovative ideas into practice and ensuring they deliver real-world impact. Despite Canada's strength in technological development, its innovation strategies often emphasize invention at the expense of adoption, leading to underutilization of breakthroughs and missed economic and social benefits. For instance, Canada is a global leader in AI technology development yet lags in AI adoption, demonstrating that invention alone is insufficient. Ensuring responsible adoption requires interdisciplinary expertise across law, policy, ethics, and organizational behaviour (Borgonovi et al., 2023).

Vaccinations are a useful analogy: The invention is the vaccine itself, but inoculation—the widespread and effective administration of the vaccine—is the true innovation. Achieving high vaccination rates requires contributions from public health, social sciences, logistics, and an EDI lens to ensure accessibility for all populations (Earl et al., 2023; McKenzie, 2021). Similarly, in the green transition, ECT inventions are crucial, but meeting Canada's sustainability targets under the *Net-Zero Emissions Accountability Act* depends on changing organizational and individual behaviours. Adoption is fundamental to market development, commercialization, and societal transformation (De Vries & Veenstra, 2024).

By recognizing adoption as a core pillar of innovation, Canada can move beyond the myth that invention alone drives progress. A truly effective STI ecosystem must prioritize strategies that support the implementation and scaling of innovative ideas across sectors. Implementation and scaling require contributions from diverse disciplines and the inclusion of equity-deserving groups in the innovation ecosystem, ensuring that technological advancements translate into meaningful, widespread impact (Lee & O'Neil, 2022). Expanding the definition of innovation beyond STEM and embedding adoption into policy and practice will lead to more inclusive, sustainable, and transformative outcomes.

Enhancing innovation metrics for greater inclusion and sustainability

Innovation in Canada is frequently evaluated through economic metrics, such as job creation and productivity growth. However, these measures fail to capture innovation's broader social and environmental value. The United Nations SDGs emphasize a triple-bottom-line approach – prioritizing people, planet, and profit – to address global challenges like poverty, inequality, and climate change (United Nations, n.d.). Expanding Canada's innovation framework to include these dimensions is critical for fostering a more equitable and sustainable future.

Traditional innovation indicators primarily emphasize economic outcomes, often overlooking the interconnected social and environmental benefits. While large corporations' R&D investments are assessed for their "multiplier" and "spillover effects," similar evaluations for SMEs – particularly those in smaller communities or owned by equity-deserving groups – are underexplored (Gunderson & Cukier, 2023). Additionally, existing measures focus narrowly on individual firms or industries rather than adopting a macroeconomic view that considers cross-industry interactions and opportunity costs (Atkinson & Zhang, 2024).

To address these gaps, the UN introduced a six-step framework in 2020 for developing STI roadmaps to support the SDGs at international, national, and subnational levels (United Nations, 2021). This framework emphasizes data, evidence, best practices (including Indigenous knowledge), gap assessments, international expertise, and financing to drive sustainable innovation (United Nations, 2021). Similarly, the OECD has advocated linking innovation to global challenges, democratizing innovation processes, and bridging economic and social innovation through policies and funding programs. It proposes a horizontal approach to innovation policy, focusing on transformative change across sectors and engaging diverse stakeholders over the long term (OECD, 2023a).

Inclusive innovation ensures that marginalized communities have access to and benefit from innovation processes. By integrating social and environmental outcomes alongside economic measures, it aligns with the triple-bottom-line approach (Cukier et al., 2022; Schillo & Robinson, 2017; Schillo & Puri, 2023). Economic and social benefits are deeply interconnected; for example, addressing health inequities—such as the women's health gap—could unlock a $1 trillion opportunity to improve lives and economies globally (Ellingrud et al., 2024). The COVID-19 vaccine rollout demonstrated this synergy, generating economic returns while reducing mortality through an equity-driven approach (McKenzie, 2021). Despite these advantages, inclusive approaches remain underutilized in Canada's STI ecosystem and are rarely embedded in goals or metrics.

Broadening the definition of innovation is essential for greater inclusion and addressing complex global challenges. Women and Indigenous Peoples, for example, often emphasize sustainability and community well-being over profit-driven priorities, offering perspectives that enrich innovation processes and help address long-term global issues (Hechavarría et al., 2017). Incorporating perspectives from both the Global North and South ensures that innovation reflects diverse needs, and effectively leverages advanced technologies alongside localized, sustainable practices (Kalkanci et al., 2019; Vazquez-Brust et al., 2013).

Indigenous research and entrepreneurship are deeply connected to land and water stewardship, and provides sustainable, innovative solutions to pressing challenges such as climate change and resource management (Croce, 2017; Dorji et al., 2024). Indigenous knowledge systems foster innovation by inspiring new approaches to sustainability (Wilson, 2020; Salmon et al., 2023). Additionally, emphasizing sustainability and community-focused priorities increases the participation of women scientists and entrepreneurs, enhancing diversity, equity, and the overall impact of innovation (Cukier, et al., 2021; Cukier et al., 2024; García-Sánchez et al., 2021).

Another critical challenge is the reliance on patents and IP as primary markers of innovation success. This disproportionately benefits specific industries while marginalizing cultural and community-based knowledge systems. Although there is growing recognition of the need to protect Indigenous cultural IP, it remains a peripheral issue in mainstream STI discussions. To create a more inclusive innovation landscape, policies must address these gaps and adopt broader, equity-focused frameworks (ISED, 2020; Phillips, 2016; Patel, 2023).

Linking entrepreneurship and innovation for equity

Innovation and entrepreneurial ecosystems are deeply intertwined. Nevertheless, the literature on innovation and entrepreneurial ecosystems is disconnected. Economists and policymakers typically analyze macro-level factors, while business and management scholars focus on the entrepreneurs at the individual level, seldom cross-referencing insights from one another. This divide limits our understanding and affects the metrics and methodologies used to evaluate these ecosystems.

However, entrepreneurship is a vital component of the innovation ecosystem. Entrepreneurs bridge creative concepts and their real-world applications, fueling innovation through new businesses, technologies, and practices (Bouncken & Kraus, 2022; De Bernardi & Azucar, 2020). Models like the Global Entrepreneurship Monitor (GEM) highlight this interconnectedness by examining both macro-level framework conditions and individual-level entrepreneurial factors, such as intent and early-stage activity. GEM provides the most comprehensive international comparative data, exploring EDI dimensions essential to a thriving innovation ecosystem. For example, it examines gender disparities, regional differences, and Indigenous entrepreneurship in Canada, demonstrating how entrepreneurship drives innovation and equitable participation (GEM, n.d.-b; GEM, 2022; GEM, n.d.-a; Government of Canada, 2020).

Ownership of firms operating in the technology sector is an important metric to consider when evaluating innovation capacity and the active participation of equity-deserving groups in STI. For example, women entrepreneurs in Canada have demonstrated high potential in FemTech, which provides innovative technology-based solutions tailored toward women's health. Their accomplishments have led to Canada ranking among the top five countries globally for the the highest number of FemTech companies (Femtech Analytics, n.d.). Their role in driving the creation of companies focused on gender-specific technology is significant in addressing this persisting innovation gap. In 2022, women founded and led 92% of the 200 FemTech startups worldwide (Xena, 2022). The global FemTech market was valued at approximately $51.25 billion in 2023, with projections indicating growth exceeding $121.33 billion by 2033, reflecting a compound annual growth rate (CAGR) of 9% between 2023 and 2033 (Precedence Research, 2024). North America has led the global FemTech market, accounting for a dominant share (52.91%) in 2023 (Fortune Business Insights, 2024). Sustaining the momentum of FemTech enterprise creation and growth by positioning Canada to capitalize on the expanding sector has been forecasted to generate $3.8 billion in revenue by 2030 within the country at a CAGR of 16.6% over the next five years (Grand View Research, n.d.).

Efforts to gather disaggregated data further underscore the importance of linking entrepreneurship and innovation ecosystems. Organizations like Statistics Canada and ISED collect data on equity-deserving groups to better understand who is being served and who is excluded. These insights are crucial for assessing how effectively the ecosystem fosters innovation and determining which strategies work for diverse groups (ISED, 2024; Statistics Canada, 2023).

Examining the entrepreneurship ecosystem provides critical insights into the dynamics of innovation: who participates, who benefits, and where barriers persist. Entrepreneurship acts as a bridge, transforming ideas into impactful innovations, driving economic growth, and creating solutions to societal challenges. Therefore, a disaggregated, inclusive approach to understanding entrepreneurship ecosystems is essential to building a productive and inclusive innovation ecosystem.

Addressing sectoral and regional biases

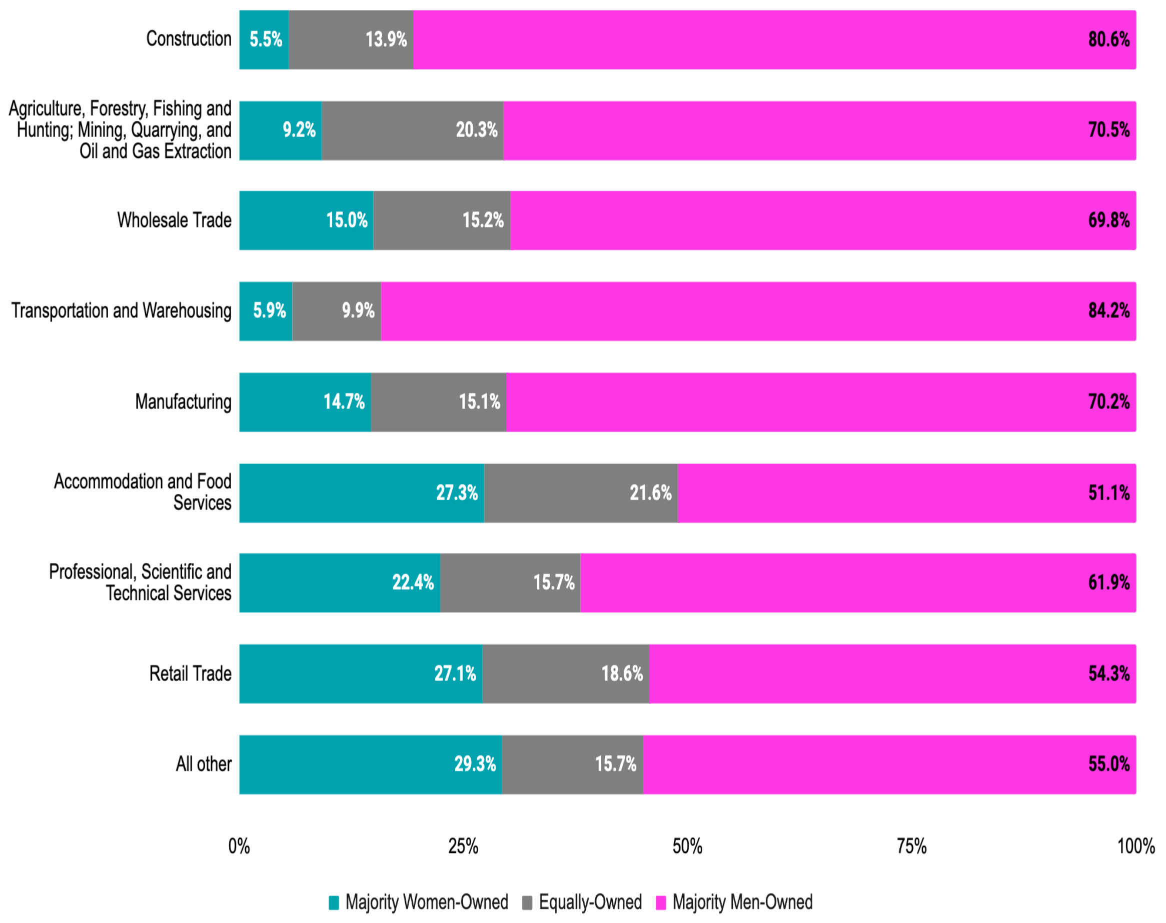
Canada's STI ecosystem often reflects regional and sectoral biases that hinder its inclusivity and potential for growth. Current strategies disproportionately prioritize high-tech industries and urban hubs. This overlooks sectors and regions where innovation often thrives through the contributions of equity-deserving groups (Brown & Shucksmith, 2019).

The urban-centric bias of current innovation strategies overlooks rural areas' unique contributions and needs. Rural innovation is frequently tied to entrepreneurship and community-driven problem-solving (Youtie et al., 2021). The OECD report *Enhancing Rural Innovation in Canada* (2024) emphasizes the need for broader definitions of innovation encompassing rural contexts. It highlights the strong link between rural innovation and entrepreneurship, advocating for policies that recognize and support the distinct innovative capacities of rural areas in Canada (OECD, 2024). For example, rural enterprises, which may innovate significantly, are less likely to engage in R&D activities than their urban counterparts (OECD, 2024). This is also reflected in women-owned businesses, although women are more likely to start a business in rural than in urban areas (OECD, 2024).

Recognizing and supporting rural innovation is critical to fostering inclusive growth and addressing the diverse challenges faced by these communities. Approximately one in five Canadians live in rural regions, which account for 97.1% of the country's landmass.

Meanwhile, the heavy emphasis on technology and manufacturing in innovation overlooks key sectors with growth and export potential. Women and other equity-deserving groups are under-represented in the high-tech and manufacturing sectors and are more likely to work in the food, services, and retail industries. However, these sectors rarely receive investments and support in R&D or innovation despite their potential for economic expansion and job creation (see Figure 8).

Figure 8. Majority ownership distribution of all small and medium-sized enterprises in an industry by gender, Canada, 2021



Source: Women Entrepreneurship Knowledge Hub. (2024).

Unintended consequences of systemic biases hinder progress for equity-deserving groups and result in missed economic and social opportunities. For example, the British Beauty Council highlights that the UK personal care and beauty industry outperforms the tech sector in growth rates, profit margins, export success, and business sustainability (British Beauty Council, 2024). In spite of such examples, gender bias in healthcare research persists, extending even to FemTech – products and services designed for women, who represent half the global population. This sector remains underfunded and overlooked despite its enormous global economic and social potential (Ellingrud et al., 2024).

In Canada, cultural industries, including those with strong Indigenous representation, demonstrate significant innovation and export potential. Yet, these industries fail to receive adequate attention (Government of Canada, 2021; Wang et al., 2020; CCIB & GAC, 2023). Similarly, social innovation, which is critical to achieving national goals, is frequently sidelined in discussions of STI due to historical and disciplinary biases. This narrow focus limits opportunities and excludes equity-deserving groups from critical innovation sectors (EDC, n.d.; Hayvon, 2024; Wall-Andrews, et al., 2022).

For example, Black-owned businesses represent a substantial proportion of the transportation and warehousing sector (34.3%), yet innovation in logistics and infrastructure receives limited emphasis. Similarly, Indigenous entrepreneurs, traditionally associated with sectors such as fishing and forestry, are increasingly active in non-traditional areas like fashion, IT, marketing, and transportation (Dunne, 2022). Additionally, women are more likely to engage in social entrepreneurship than commercial ventures, highlighting their unique economic contributions (Dickel & Eckardt, 2020).

Successfully scaling innovation in Canada's STI ecosystem requires more than just generating groundbreaking ideas—it also depends on effective production and commercialization. Consumer-facing industries, such as food and fashion, are particularly affected, as they depend on physical production processes but are often marginalized in policy and program frameworks (OECD, 2015). Given their significant representation in these industries, equity-deserving groups are disproportionately affected by this neglect.

Furthermore, social, and community-driven innovations play a vital role in advancing SDGs. However, traditional innovation ecosystems often fail to recognize and support these localized, socially motivated efforts. These forms of innovation are crucial for fostering inclusion and sustainable development on a global scale (WIPO, 2024).

Expanding indicators to reflect diverse innovation

Innovation output is traditionally defined as new knowledge that enhances products or processes (OECD & Eurostat, 2018). Historically, scientific publications and IP protections have been the primary metrics for measuring knowledge creation, while R&D investments serve as key input indicators. However, this reliance on R&D-based metrics disproportionately favours large firms in the technology and manufacturing sectors, which invest heavily in R&D to maintain market competitiveness (Atkinson & Zhang, 2024). These male-dominated industries offer limited participation opportunities for women and other equity-deserving groups (Women Tech Network, 2023).

Similarly, standard indicators such as R&D investments, patents, and IP creation are sector-specific and often fail to encompass broader innovation activities. Indigenous communities, for example, are increasingly focused on protecting cultural IP, including traditional knowledge and heritage. A survey by the Canadian Council for Indigenous Business (CCIB) revealed that only one in five Indigenous business owners uses IP to safeguard cultural expressions. These results underscore the need for greater awareness and accessibility of IP tools for Indigenous entrepreneurs (CCIB, 2021).

Traditional STI indicators, such as peer-reviewed publications, reinforce disciplinary biases and undervalue alternative knowledge systems. Although agencies are beginning to adopt broader impact and knowledge mobilization frameworks, academic reward systems continue to prioritize traditional metrics. A collaborative study conducted in the U.S., Canada, and South Africa found that research funding and reward systems are structurally biased, often favouring past successes as criteria for future grants. This reinforces cycles of privilege, as peer-reviewed publications remain the dominant measure of academic excellence and funding eligibility. Consequently, alternative contributions—such as commercialization, societal impact, and community engagement—are undervalued in decision-making processes (Sá et al., 2020). This bias exacerbates existing disparities, as traditional academic reward systems overwhelmingly benefit already privileged individuals and disciplines within the STI ecosystem. The under-representation of equity-deserving groups in academia – especially in tenured positions – further contributes to disparities in publication output and impact scores (Del Carmen Meza-Mejia et al., 2023).

Efforts to develop inclusive innovation metrics are ongoing. For example, the WEF's Global Competitiveness Report evaluates 141 countries using 114 indicators across 12 pillars, including environmental and social impacts (Schwab, 2019). While these models still exhibit biases toward technology, inclusive innovation frameworks go further by incorporating comprehensive indicators for social and environmental outcomes alongside detailed measures of economic impacts.

Towards inclusive impact indicators in science, technology, and innovation

Measuring innovation impact requires multidimensional approaches beyond traditional metrics like GDP growth, R&D spending, and patents, which often favour large, technology-centric industries. These measures exclude the contributions of equity-deserving groups and overlook broader societal impacts, such as equitable wealth distribution, rural innovation, and social entrepreneurship.

Traditional metrics that measure impact across economic, social, environmental, and entrepreneurial dimensions can be enhanced through an EDI lens. For example, economic metrics can incorporate diversity in hiring and wage equity, while social metrics might evaluate progress toward public health and community resilience. Environmental indicators should prioritize sustainability and solutions for vulnerable populations. There is also a need to value non-traditional outputs, such as Indigenous cultural IP and interdisciplinary knowledge mobilization (CCIB, 2021).

Measuring and monitoring progress through inclusive indicators is essential for fostering an equitable and impactful STI ecosystem. Effective progress tracking ensures that diverse communities' contributions, needs, and outcomes are recognized while addressing systemic inequities (Ràfols, 2019). Integrating EDI principles into innovation metrics enables stakeholders to monitor advancements and identify areas requiring further attention.

Earl et al. (2023) advocate embedding EDI principles into innovation indicators, categorizing them into targeted equity-deserving groups and producing unit perspectives. Innovation should be measured as a dynamic process in ecosystems, with indicators encompassing context, inputs, activities, outputs, impacts, and governance. These metrics align with theories of change and inclusive ecosystem models, enabling consistent evaluation and accountability over time.

A robust monitoring system relies on disaggregated and intersectional data across race, gender, Indigenous identity, disability, immigration status, geographic location, and age. This data enables a detailed understanding of innovation's impacts on equity-deserving groups, identifying contributions and gaps across sectors and SDGs. Such granular data ensures the ecosystem evolves in response to the needs of diverse populations.

However, the lack of comprehensive disaggregated data presents a challenge to comprehensively monitoring progress (Kauh et al., 2021). Advocacy and sustained efforts to improve data collection and accessibility are critical for building a monitoring framework reflecting innovation ecosystems' diversity. Without these efforts, gaps in representation and impact assessment could persist.

Additionally, monitoring must account for the long-term nature of some innovations, such as social innovations, transformative changes, and climate technologies. These often require years to demonstrate measurable outcomes, necessitating patience and long-term tracking to ensure their impacts are captured, and inclusive benefits realized (Chatti et. al., 2024).

Inclusive indicators measure progress, guide decision-making, highlight disparities, and promote accountability. By incorporating tools like Gender Based Analysis Plus (GBA+) and critical race theory, these indicators challenge systemic inequities and help transform STI ecosystems into equitable and inclusive spaces. Monitoring progress is not just a tool for reflection – it is a catalyst for meaningful change and sustainable development. Table 8 presents inclusive indicators to measure EDI in Canada’s STI ecosystem.

Table 8. Inclusive innovation indicators (adapted from Chatti et al., 2024; Earl et al., 2023)
Italics are for proposed additions.

	Inclusive Measures	EDI Questions and current state	Indicators
Context			
External environment	- Government (conducive regulatory environment) - Policies related to research, innovation, and commercialization (Pro-business policies *incl. for SMEs);* -Government policies supporting innovation in all sectors) - Interdependence of regional economy and private sector with global markets - *Other government policies* - *Infrastructure* - *Culture*	- What sectors, activities, and outcomes do policies target? - Are policies conducive to innovations in all sectors and social, environmental, and economic impact - What regional differences exist, and what are these regions' demographic makeup? **Current state**: - Institutional policies promoting paid leave, subsidized childcare, and part-time employment lead to more women entrepreneurs -Policies favour innovation in urban hubs - Over-emphasis on technology and manufacturing sectors - Government initiatives such as the Women Entrepreneurship Strategy have facilitated innovations made by women and other equity-deserving groups	- Biases and barriers incorporated in policies - Gaps in geographic markets
Input			
R&D Capacity	- Research (Full-time researchers, HERD, GOVERD) - Business Ambition - Internet access - Technology adoption (ICT investment)	- What demographic groups are over- and under-represented among researchers? - Do rural regions have equal conditions for R&D? -Which sectors perform well in technology adoption, and what demographic groups are represented in those? **Current state**: - Women and equity-deserving groups are under-represented - Women in rural areas participate less in formal R&D activities - 61% of Indigenous communities in rural areas do not have adequate high-speed internet - Large technology & manufacturing firms with men business owners	- Gender and diversity gaps in the researcher population by field
Human Capital	- People & Skills (PSE, college attainment, literacy, problem-solving using tech, university attainment, skill sets of graduates, doctoral degrees *in STEM and non-STEM*, Internal labour mobility, *share of skilled foreign workers in jobs relative to education level)* -Investments in Post Secondary Education	- What demographic groups are over- and under-represented in education (level of degrees and field of education) - What investments in PSE are made that target equity-deserving groups? - What counts as scientific outputs and in which areas are equity-deserving groups highly present (e.g., patents, copyright, trademarks, design, scientific publications, knowledge mobilization products)	- Barriers to education for equity-deserving groups - *Literacy, numeracy, and digital knowledge* - *Access to primary and secondary education* - *Access to apprenticeship programs*

	(PSE) - Scientific outputs	**Current state**: - Although women's enrolment in STEM programs is increasing, they are still 30% less likely to enroll in STEM programs than men, with an even larger gap for racialized women -Peer-reviewed publications count as the main source of academic excellence, but the system is fraud - Women assume more advising and mentoring roles, which are undervalued and excluded from scientific output. - Equity-deserving groups are overlooked for tenured positions	*- Educational attainment (i.e. tertiary education rates)* *- Participation in apprenticeship programmes, mentoring or talent development, on-the-job skills development, and learning* *- Unemployment/labour force participation rates*
Infrastructure	Access of equity-deserving groups to: -Facilities -Transportation - Energy/electricity - Supply chain - Broadband	-Who has/has not got access **Current state**: - Rural and remote communities lack access to basic infrastructure - Indigenous communities are often left without access to clean water supplies -Shift from physical to digital infrastructure disregards digital literacy issues, broadband speed and affordability.	
Finance and support	- R&D investments - Direct Foreign Investment - Government R&D - Access to financing (including terms and interest rates) - VC and Angel investments - Microfinance loans *- Grants* *- Procurement*	- Who is funding what and whom? **Current state**: -Canada's R&D intensity remains below the OECD average, primarily due to low business expenditure -Focus on high tech over other sectors - Femtech & research is underfunded and often overlooked -Indigenous Peoples, women, and those with disabilities receive less research funding - Onl4 4% of VC goes to women founders	- Biases in funding and spending decisions *- Access to business financing and advisory services for equity-deserving groups*
Activities			
Commercialization	- Entrepreneurship (initiative, startup, gender gap in entrepreneurial initiative) - R&D (BERD) - Labour force participation and employment (general, tech, SMEs) *- Business Intermediaries - incubators and accelerators*	- Which groups do the marketing/advertisement materials target? - Are the materials accessible to people with disabilities/communities with limited access to technology? - Is there culturally sensitive content? - Is there diversity in retail channels? **Current state:** Linear lab-to-market structure where technology is developed before market demand is prevalent - systematic gender bias observed in social impact accelerators	- Innovation activities of SMEs owned by equity-deserving groups - Supplier and procurement diversity *- Entrepreneurial activity by equity-deserving group* *- Entrepreneurial mentorship by equity-deserving group*

		- Women show a preference for alternative support methods to traditional incubators	
Production	- Product and Process Innovation - Time to breakeven - Efficiency/effectiveness - Automation	- Who are the suppliers? - Are products distributed equitably (i.e., are products equally available for all demographic groups and in urban and rural areas?) **Current state**: - Difficulty in scaling up, automating and producing efficiently -Lack of shared production facilities - Data gaps exist for equity-deserving groups	- Share of product and process innovation conducted by equity-deserving groups - Supplier and procurement diversity - *Product development collaborations with equity-deserving groups*
Collaboration/ Knowledge Creation	- Business-university collaborations - Business Local - Business International - University-based knowledge spillovers - *Community engagement* - *Partnerships with users* - *Indigenous innovation activities*	- Beyond R&D, what type of innovation activities exist? - Who employs Canada’s talent, and how is this distributed between large firms and SMEs? - How do Indigenous communities define and practice innovation? **Current state**: - Dominance of the linear model (lab-to-market) - Alternative financing options such as crowdsourcing and co-development are developing - Storytelling as a form of knowledge sharing in Indigenous communities	- Relevant innovation activities by equity-deserving groups - Indigenous ways of innovating - *User design feedback, needs survey, and sources of process ideas*
Impact			
Economic impact	- Economic Growth (GDP per capita, GDP per capita growth) - Productivity (GDP per hour worked) - Employment (established creation, churn and job creation) - Wages - Income and Wealth Distribution (Gini coefficient, distribution by income decile, urban vs. rural) - Export - Investments - Poverty - Intergenerational finance	- Are there multiplier effects, including cost avoidance? - Is output (GDP-related, income, poverty) distributed fairly among demographic groups? **Current state:** **-**Real GDP per capita has declined in five of the past six quarters, currently near 2017 levels -In 2022, Canada's Gini coefficient was approximately 0.433 for market income and 0.317 for after-tax income, meaning redistribution led to lower levels of inequality (Statistics Canada, 2024)	- Contributions to changing behaviour and advancing the adoption of behaviours, policies and practices to advance productivity, innovation, and job creation. - Wealth distributions and poverty among demographic groups and geographic areas - *Diversity rate of new hires* - *Promotion of diversity rates* - *Wage (earning) gaps* - *Income disparities*

Social impact	- SDG contributions (public health, food, gender equity, peace) *- Community strength (population growth in rural areas, start-up rate in rural areas)*	- What innovations contribute to progress toward SDGs with a social focus? - How are rural communities strengthened? - Are there unintended consequences? Who benefits, and who may be harmed by innovations? **Current state:** **-** Canada supports public health with the Dental Care Plan, food security via the Local Food Infrastructure Fund, and gender equity through GBA+ -Climate change disproportionately harms rural and Indigenous populations. -Housing Accelerator Fund and Indigenous food programs may improve housing and food access in rural areas (Government of Canada, 2024)	- Social goods created (health, equality, education, generational wealth) -Contributions of and for equity-deserving groups to social innovations - Ways to retain young people and revitalize rural communities
Environmental impact	- Reduce negative environmental impacts/deliver environmental benefits - Electric battery cost; Costs of renewable energy - SDG contributions (cost of renewable energy, clean water)	- What innovations contribute to progress toward climate- and environment-focused SDGs? - Who are the most vulnerable populations to climate change, and what solutions are being developed? **Current state**: - Women entrepreneurs are more likely to incorporate sustainability goals into their business (Hechavarria et al., 2017) - Indigenous Peoples have a higher share among workers in the ECT sector (5%) than in the overall workforce (4%), but all other equity-deserving groups are significantly under-represented	- Contribution to achieving net zero goals - Contributions to scope 1, 2, and 3 emissions - Contributions to changing behaviour and advancing the adoption of sustainable policies and practices. - Contributions of and for equity-deserving groups to environmental innovations *- Environmental programmes, processes, products, and services*
Knowledge Outputs	- Patent applications - Product and process innovations - Designs copyrights and trademarks -Scientific publications (citations) *- Other knowledge mobilization and knowledge translation products (workshops, webinars, traditional and social media) and reach* *- Impact on knowledge, attitudes, behaviours, policy, and practice*	-Are there barriers to equity-seeking groups in academic and research publication production processes? - Is there a bias against interdisciplinary and EDI-related research? - Is there a bias against research methods (e.g. participatory action research, qualitative research) that may exclude equity-deserving groups? - Are other forms of knowledge mobilization and dissemination valued, tracked, and counted in grant-making, hiring and promotional decisions? **Current state**: -Only 17.7% of international patents were filed by women (WIPO) -At the current rate, gender parity will not be achieved until	- Contributions and barriers of equity-deserving groups in scientific publication processes - Involvement of equity-deserving groups in research decision processes - Valuing other forms of knowledge mobilization and dissemination, including impacts on knowledge, attitudes, behaviour, policies, and

		2077 -As of 2020, 15% of Canadian SMEs held IP, with the majority of women-owned SMEs leading at 19.4%, while SMEs owned by persons with disabilities (11.1%) and Indigenous Peoples (7.2%) were below average -1 in 5 Indigenous entrepreneurs use IP to protect cultural knowledge & expressions.	practices
Entrepreneurial Activity	Entrepreneurial Intent Total Early-Stage Entrepreneurial Activity Start-ups Growth Rates Unicorns	What are the differences between women, Indigenous peoples, and other equity-deserving groups? What are the barriers and enablers (e.g. access to funding, knowledge, skills, and supports)? **Current state:** **-** Women and other equity-deserving groups are more likely to start businesses in food, services, and retail sectors, but these seldom are a focus for investments and support in R&D or innovation	
Governance			
Equity, Diversity, and Inclusion	- Whole-of-society and multi-actor approach across entire value chains to research and innovation (horizontally and vertically coherent governance settings involving all relevant actors and stakeholders) - *Representation, participation, and inclusion in decision-making bodies* - *Indigenous-led policy design and research*	- Who governs innovation ecosystems? - What are the key committees and decision-making bodies? Who is included/excluded? - Are equity-deserving groups included and benefit from innovation, and are Indigenous Peoples involved fairly? **Current state**: - Europe’s Horizon research program requires research design following RRI principles. - Canada’s Tri-Agencies have developed and implemented comprehensive EDI guidelines for obtaining research funding.	- Levels of exclusion/inclusion of demographic groups in the governance of innovation ecosystems - Indigenous involvement in innovation ecosystems and decisions

Effective Strategies to Enhance Equity, Diversity, and Inclusion in the Science, Technology, and Innovation Ecosystem

This section explores the critical role of EDI in fostering inclusive STI ecosystems. It begins by outlining the theoretical evolution of STI frameworks, emphasizing the shift toward interdisciplinary and inclusive approaches. The discussion then examines systemic barriers faced by equity-deserving groups and highlights the integration of EDI principles in policy design, governance, and collaborative innovation. Additionally, this section addresses strategies for enhancing human capital, financing, and support systems to ensure equitable access and participation in innovation. This section concludes by presenting actionable recommendations and highlighting existing challenges, which underscore the importance of building an inclusive innovation ecosystem as a foundation for sustainable progress and societal impact. Many of the recommendations include examples of policies and programs offered by government and organizations to support EDI in the STI ecosystem. These include the Tri-Council EDI Action, which seeks to improve equitable access to funding in research, and the Women Entrepreneurship Strategy (WES), which advances access to financing and networks for women entrepreneurs, are just two examples of targeted strategies with important objectives. However, more needs to be done to improve program evaluation to understand how successful these policies or programs are at achieving their desired goals.

The scholarship on STI ecosystems has evolved significantly, drawing on diverse disciplines and employing complex systems theory to analyze their inputs, outputs, and interactions. Economists have traditionally focused on macro-level forces driving innovation, such as economic policies and global market trends, while business scholars have emphasized the role of entrepreneurs as agents of change. However, disciplinary silos have limited cross-field integration and overlooked broader systemic interconnections between these approaches.

Across disciplines, scholars have extensively explored the components and interdependencies of STI ecosystems, which are essential for creating value. Early models often adopted a linear approach, tracing innovation from inputs like resources and knowledge to outputs like products and services. However, contemporary approaches emphasize the dynamic nature of these systems, highlighting concepts such as emergence, interconnectedness, and incommensurability. Despite their strengths, these models have emphasized technological innovation, leading to unintended consequences such as the marginalization of broader STI goals like EDI (Cohen, 2005;

Cooke, 2007; GEM, 2021; Granstrand & Holgersson, 2020; Isenberg, 2010; Mason & Brown, 2014; Stam & Van de Ven, 2021; Thai et al., 2023; WEF, 2014; Wurth et al., 2021;).

Despite their variations, contemporary STI ecosystem models share key elements, including the centrality of the entrepreneur. Valkokari's framework distinguishes among innovation, entrepreneurial, and knowledge ecosystems based on their outcomes, interactions, and actors' roles. It positions the innovation ecosystem as an overarching structure integrating the knowledge and entrepreneurial ecosystems, with the entrepreneur as the critical linking agent (Valkokari, 2015). This underscores the entrepreneur's indispensable role in fostering connections and driving systemic innovation.

In recent years, there has also been a growing emphasis on inclusive innovation ecosystems, particularly in emerging economies and "bottom of the pyramid" social innovations (Foster & Heeks, 2013; Zhao et al., 2021). Scholars such as Mortazavi et al. have identified key themes in inclusive innovation, including affordability-focused innovation, capability building, and addressing social empowerment constraints. Moreover, the term inclusive innovation has been expanded to integrate gender and critical race theory into ecosystem models to level the playing field for women, Indigenous Peoples, and racialized groups (Owalla et al., 2021; Ozkazanc-Pan & Muntean, 2021).

This evolving scholarship highlights the need for inclusive approaches to STI ecosystems. Addressing structural inequalities and promoting diverse participation can reshape STI ecosystems to achieve both technological advancement and social equity, ensuring innovation benefits all segments of society.

Barriers and pathways to an inclusive innovation ecosystem

The barriers equity-deserving groups face in the STI ecosystem are extensive and well-documented (e.g., Brush & Cooper, 2012; Dabic et al., 2020; Jakobsh & Boskov, 2020). These obstacles span multiple stages of the innovation pipeline, including science and research, technology development, commercialization, adoption, and active participation in innovation and entrepreneurial ecosystems. Systematic analyses and scholarly works provide a comprehensive understanding of the structural inequalities in these systems and suggest pathways for fostering inclusion.

Entrepreneurial ecosystems often privilege demographics associated with white, male, and mainstream groups (Canadian Diversity, 2020). Wurth et al. argue that exclusion and discrimination in these ecosystems create ambiguity about their purpose–whether they reduce or perpetuate inequality. The systemic exclusion of equity-deserving groups highlights the need for a strategic approach to transforming entrepreneurial environments to foster inclusion. Scholars emphasize that this transformation requires a fundamental redesign of the systems supporting innovation and entrepreneurship (Cukier et al., 2022; Gupta & Treviranus, 2022; Hedberg, 2023; Orser et al., 2024; WEKH, 2024).

Inclusive innovation ecosystems promote equitable participation by fostering supportive frameworks, equitable policies, and a culture of inclusivity (Chatti et al., 2024; Ozkan et al., 2023). These ecosystems prioritize a gender and diversity lens, emphasizing key elements:

1. **Framework conditions**: These include institutional regulations, cultural norms, physical infrastructure, and market demand. Addressing these conditions involves dismantling systemic biases and creating environments where equity-deserving groups can thrive.
2. **Systemic conditions**: Networks, leadership, finance, talent, knowledge generation, and support services form the backbone of any entrepreneurial ecosystem. Ensuring diversity in these systemic elements can catalyze innovation and foster inclusivity.
3. **Entrepreneurial outputs**: Outputs such as innovative startups, high-growth enterprises, and entrepreneurial employee activities are directly influenced by the inclusivity of the system.
4. **Outcomes**: Productivity, income, employment opportunities, contributions to the SDGs, and overall societal well-being indicate the effectiveness of inclusive innovation (Herbertson & Lee, 2024; Hameed et al., 2023).

A multilevel approach to studying and transforming interactions between societal, organizational, and individual actors is essential for building inclusive ecosystems (Gupta et al., 2007; Schillo et al., 2016). Governance is crucial in ensuring inclusivity, as highlighted by Schillo, who extends traditional innovation ecosystem models by incorporating governance as a central element (Schillo & Robinson, 2017).

Initially, inclusive innovation focused on improving the social and economic well-being of historically disadvantaged groups (Schillo & Robinson, 2017). However, recent approaches advocate for the active participation of all demographic groups in innovation. This perspective aligns with the principle of responsible research and innovation (RRI), which emphasizes conducting science "for and with society" rather than merely in it (Owen et al., 2012). Programs such as Europe's Horizon research and innovation initiative exemplify this principle by promoting a whole-of-society, multi-actor approach across value chains (European Commission, 2023). Coordinated governance and stakeholder engagement are essential for addressing complex challenges, such as green and digital transitions, while ensuring equitable participation (OECD, 2023b).

Ensuring diverse participation across decision-making, innovation activities, and representation in organizations is critical for creating inclusive ecosystems. Research consistently demonstrates that diverse teams bring broader perspectives, better address the needs of all demographic groups, and foster more innovative and impactful ideas (Specht & Crowston, 2022; Yang et al., 2022). Moreover, inclusive practices reduce the risk of harm to equity-deserving groups while enhancing the overall effectiveness of innovation systems.

The OECD (2015) outlines several strategies for governments to support inclusive innovation and ensure policy coherence:

1. **Investing in institutional research**: Prioritizing research on inclusive innovations can address systemic barriers and create opportunities for historically excluded groups.
2. **Regulatory frameworks**: Policies must balance facilitating innovation with maintaining critical quality standards to ensure innovations serving low-income groups are not impeded.
3. **Credit options**: Financial support to stabilize income for low-income groups can enable their participation in entrepreneurial activities.
4. **Support for social entrepreneurs**: Reducing barriers for social entrepreneurs encourages innovation that addresses societal challenges.
5. **Inter-ministerial cooperation**: Enhancing collaboration among government ministries ensures a unified approach to inclusive innovation.
6. **Intermediary Institutions**: Institutions that provide technical expertise and connect grassroots innovators with pro-innovation opportunities are vital for fostering inclusivity (OECD, 2015).

Despite these efforts, inclusive innovation still faces persistent challenges requiring targeted interventions. Key issues include the types and scale of innovation, consumer information needs, innovation costs, access to finance, and market conditions. Policy interventions must prioritize improving access to financial resources, technical expertise, grassroots knowledge, and market opportunities. Strengthening IP rights frameworks to support diverse innovators is also crucial (OECD, 2015).

Inclusive government policy and program development

This section examines the key players in the innovation ecosystem—government agencies, post-secondary institutions, financial institutions, business intermediaries, incubators, and accelerators—and how their policies, programs, and processes affect equity-deserving groups. It explores representation and decision-making processes, drawing on the Inclusive Innovation and Entrepreneurship Ecosystem Model to analyze these actors' roles and impacts across societal, organizational, and individual levels.

External environment societal (macro) level

Innovation ecosystems operate within broader external conditions that influence their development, including regulatory, social, and political environments, policies, infrastructure, and informal factors such as cultural values and attitudes (Isenberg, 2010). Research has examined how these external factors shape entrepreneurial ecosystems, highlighting their role in fostering or constraining innovation (Wurth et al., 2022). GEM considers this among enabling conditions for entrepreneurs.

Government policies

Inclusive policies and programs can help dismantle systemic barriers in the STI ecosystem by embedding EDI principles into policies and regulatory frameworks. Government policies play a crucial role in addressing barriers faced by equity-deserving groups and fostering inclusivity (Schillo and Robinson, 2017). Research using GEM data highlights that countries with institutional arrangements mitigating work-family conflicts – such as paid leave, subsidized childcare, and part-time employment opportunities – have a higher representation of women in high-growth entrepreneurship despite women being less likely to pursue business ownership overall (Thébaud, 2015).

Beyond addressing work-family conflicts, broader policies are instrumental in creating an equitable innovation ecosystem. These include taxation, investment regulations, childcare policies, transportation, portable benefits, accommodations, immigration frameworks, and green transition initiatives (Lau et al., 2022). Such policies significantly impact EDI by shaping the external conditions conducive to entrepreneurship. Aligning institutional frameworks with equity-deserving groups' needs ensures more inclusive opportunities for women and diverse entrepreneurs.

Science, technology, and innovation policies, programs, and services

Developing and implementing inclusive STI policies, programs, and services are vital to fostering an inclusive innovation ecosystem. Policymakers must consider who benefits from these initiatives and who is excluded, as failing to do so may create barriers or unintended consequences (CRCC, 2024). Understanding the unique experiences of equity-deserving groups enables policymakers to set meaningful targets and implement activities that foster equity and inclusivity in the innovation ecosystem (Kalliomäki et al., 2024; Mitacs, 2023). Despite limitations in comprehensive disaggregated data, existing indicators provide a foundation for creating inclusive programs that effectively support equity-deserving entrepreneurs.

In Canada, numerous efforts have been initiated to address the needs of diverse entrepreneurs through federal, provincial, and municipal special programs, alongside initiatives by financial institutions and corporations. For example, the Women Entrepreneurship Strategy (WES) employs a whole of government approach, requiring all departments to consider their support for women entrepreneurs. Preliminary evaluations of WES indicate that over half of the participants introduced innovations spanning processes, products, services, business models, and sustainability. However, data on the impact of such programs remains uneven. Additionally, data on the impact of similar programs also remain uneven. While the government has launched programs to support Indigenous entrepreneurs, Black entrepreneurs, and 2SLGBTQ+

entrepreneurs, limited data on their outcomes underscores the importance of collecting disaggregated data to analyze participation and assess the differentiated impacts of various initiatives. The government has initiated efforts to collect disaggregated data to analyze the participation of various segments of entrepreneurs and assess the differentiated impacts of programs such as those offered by Innovation Canada, the Regional Development Agencies, Industrial Research Assistance Program (IRAP), and the Canadian Digital Adoption Program, among others.

Despite these initiatives, gaps persist in translating commitments to inclusion into effective policies and programs. While GBA+ is a mandatory requirement for Canadian federal departments and agencies–when developing policies, programs, and initiatives – critics argue that it is often treated as a performative "box-checking" exercise, particularly in economic development and innovation departments (Cameron & Tedds, 2023; Hankivsky & Mussell, 2018; House of Commons, 2016; Senate of Canada, 2023; Whynot, 2021). Additionally, there is increasing recognition of the need to emphasize the plus in GBA+ by incorporating Indigenous economic inclusion, anti-racism approaches, and intersectional considerations (Standing Senate of the Committee on Social Affairs, Science and Technology, 2023). Some departments are testing complementary approaches to integrating EDI throughout policy and program design, implementation, and evaluation (Treasury Board of Canada Secretariat, 2018; SSHRC, 2024).

Legislation, regulation, and voluntary codes significantly influence EDI commitments in Canada's STI ecosystem (Cukier et al., 2023). While federally regulated companies must comply with employment equity and pay equity laws, many non-profit organizations, including post-secondary institutions (PSE) and hospitals, are not subject to these regulations. Expanding these frameworks to include the broader non-profit sector could further promote EDI across the innovation ecosystem.

Governments and other stakeholders also leverage granting, financing, and procurement power to promote EDI. For example, funding agencies such as Tri-Council Agencies, Regional Development Agencies, and the Strategic Science Fund have integrated EDI requirements into their funding processes. These entities require applicants to report on team representation, leadership diversity, and EDI strategies, incorporating these metrics into their selection criteria. Such practices can have a transformational impact by encouraging organizations to prioritize inclusion and equity in their operations.

Despite these advances, challenges remain in translating commitments to inclusion into systemic, responsive, and impactful policies and programs. Creating impactful programs requires coordinated efforts across multiple levels of government and institutions. A systems perspective can help identify and strengthen enablers to create an equitable innovation ecosystem (Lapointe & Nemtin, 2023; Suseno & Standing, 2017). Creating an equitable STI ecosystem requires integrating inclusive practices at every stage of the policy and program life cycle, including evaluation and accountability measures. Furthermore, incorporating a diverse range of performance indicators can help assess the effectiveness of initiatives and ensure they benefit all segments of the population.

The importance of inclusive policies, programs, and services extends beyond individual initiatives. An inclusive STI ecosystem can drive economic growth, enhance social cohesion, and improve the well-being of equity-deserving communities (Schillo & Robinson, 2017). By addressing systemic barriers, fostering equitable opportunities, and promoting diverse perspectives, Canada can harness the full potential of its talent pool and create a more resilient and innovative economy (Ducheck et al., 2020). Creating and inclusive and innovative economy requires targeted initiatives for equity-deserving groups and a holistic approach that integrates inclusivity into the broader STI strategy. Policymakers, institutions, and stakeholders must collaborate to build an ecosystem that values diversity and ensures equitable access to resources, opportunities, and success.

Investing in science, technology, and innovation infrastructure

Science, technology, and innovation infrastructure encompasses the physical, digital, and organizational systems and resources necessary to support STI activities—including research facilities, digital networks, and innovation ecosystems. Investing in STI infrastructure is a cornerstone of advancing EDI in the STI ecosystem.

Historically, discussions of STI infrastructure centred on physical assets such as transportation networks, supply chains, and logistics systems. These infrastructures are critical to economic stability and societal development. The COVID-19 pandemic exposed vulnerabilities in these systems, leading to unprecedented disruptions in global supply chains and transportation. Equity-deserving groups, particularly those in rural and remote areas, face persistent barriers to accessing even basic infrastructure. Indigenous communities, for example, often lack reliable access to essential services like clean water. (Arsenault, 2020; Ragsdale & Shew, 2023; Sarkar et al., 2015). Transportation-related challenges – including limited availability, unaffordable fares, and safety concerns – further restrict access to critical opportunities such as employment, healthcare, and education, exacerbating inequalities and hindering inclusive development (Assembly of First Nations and Indigenous Services Canada, 2023).

In recent years, STI discussions have broadened to include digital infrastructure, reflecting the increasing digitization of education, government services, and market access. The increasing importance of digital infrastructure has highlighted the digital divide as a critical issue. Challenges such as affordability, accessibility, and limited digital literacy disproportionately affect equity-deserving groups (Andry et al., 2021; Martinovic & Freiman, 2018; Raihan et al., 2024; Turn et al., 2022). In Canada, broadband access is significantly lower in rural and Indigenous communities, with only a small percentage meeting the national high-speed internet standard (Statistics Canada, 2023; Statistics Canada, 2022; Environics Institute, 2024; ITAC, 2022). A report by the

Assembly of First Nations found that 61% of 748 Indigenous communities lacked adequate high-speed internet access (Assembly of First Nations and Indigenous Services Canada, 2023; Arxiv, 2022; CBC News, 2021; Ernst & Young, 2020; MarketWatch, 2023; OAG, 2023; Scholarly Publishing Collective, 2021; The Samuel Centre for Social Connectedness, 2022).

Debates on STI infrastructure investment often center on R&D, post-secondary institutions, and technology. Research conducted through an EDI lens broadens this focus, emphasizing the need to provide a broader range of participants with access to the STI ecosystem. Bridging access to resources and addressing the digital divide must remain priorities.

Research conducted through an EDI lens underscores the importance of creating more inclusive access to STI resources (Environics Institute, 2024). Expanding investment beyond traditional priorities such as R&D, PSE institutions, and technology makes it possible to include a more diverse range of participants in the innovation ecosystem. This inclusive approach enhances equity and enriches innovation by incorporating diverse perspectives and experiences (Environics Institute, 2024; ITAC, 2022; Statistics Canada, 2023; Statistics Canada, 2022).

Additionally, emerging technologies, particularly artificial intelligence (AI), present opportunities, and risks in the drive toward greater inclusion. New AI tools have the potential to mitigate existing divides, such as by enabling access to remote education and digital healthcare (Okenyi & Walker, 2024). However, without proactive measures, these same technologies could exacerbate existing inequities (Jamal, 2024; OECD, 2024; Scoble & Cronin, 2025). For example, algorithmic bias can reinforce societal disparities when AI systems are trained on skewed data, leading to unfair hiring, lending, and law enforcement outcomes (Cachat-Rosset & Klarsfeld, 2023). The lack of diversity in AI development further compounds this issue, as technologies may fail to account for the needs of equity-deserving groups. For example, facial recognition systems often have higher error rates for individuals with darker skin tones due to inadequate training data (Shams, Zowghi, & Bano, 2023). In education, AI-powered assessments may misrepresent student abilities, perpetuating inequalities (Varsik & Vosberg, 2024). To prevent these risks, AI must be designed with diverse datasets, inclusive frameworks, and robust oversight to ensure equitable benefits for all. Managing these challenges while promoting responsible AI adoption is crucial for fostering an inclusive STI ecosystem. (Tekic et al., 2023).

Adopting inclusive standards and processes

Standards are a cornerstone of innovation, guiding development, commercialization, and adoption of new technologies and concepts. Standards provide a shared framework for interoperability, safety, quality, and market access by streamlining processes and fostering stakeholder trust. While standards can accelerate growth, poorly designed standards may hinder progress and reinforce inequalities. Despite their significance, their role in fostering inclusivity in innovation is often overlooked (Schilling, 2024).

In recent years, standards organizations at both international and national levels have increasingly recognized the need to embed gender and diversity lenses into their frameworks. The ISO has led this effort, implementing a Gender Action Plan in 2019 to promote inclusivity and gender equality in standardization. This aligns with SDG 5, which focuses on achieving gender equality and empowering women and girls (ISO, n.d.). The ISO frames its EDI work with three guiding principles:

- **Representation (a seat at the table)**: The status of women's representation in standards development;
- **Participation (a voice at the table)**: The level of influence that women have within the standards process;
- **Leadership (head of the table)**: Women's experiences leading technical work (Diversity Institute, 2023).

ISO has also developed gender-responsive standards (GRS) to ensure that technical work considers gender perspectives. In collaboration with UN Women, ISO has advanced initiatives to make technology standards more inclusive, recognizing the disproportionate impact of exclusionary standards on women and equity-deserving groups (Molinier, 2023). Similarly, the Standards Council of Canada (SCC) has launched strategies to improve gender representation in standards development and incorporate gender expertise into its processes (SCC-CCN. (n.d.). These efforts create fairer systems and enhance the innovation landscape by bringing diverse perspectives into the standardization process.

Specific standards relevant to STI are also emerging to address systemic inequities. For example, the Swedish Standards Organization has focused on defining women-owned versus women-led SMEs to prevent tokenism and ensure genuine representation (SIS, 2021). However, caution is necessary to prevent such standards from inadvertently disadvantaging women entrepreneurs, especially when seeking investments.

Beyond gender, inclusive design standards are being developed to address the needs of a broader range of equity-deserving groups. Inclusive standards span areas from infrastructure development to user interface design, ensuring accessibility not only for persons with disabilities but also for diverse populations. Inclusive design fosters a more equitable innovation ecosystem, enabling products and services to reach a wider audience and cater to varied needs.

While policy interventions—such as government-funded accelerators for women or targeted research funding—play a vital role in promoting inclusivity, they are not always sufficient (Ozkazanc-Pan & Muntean,2021). Such measures often risk isolating equity-deserving groups into silos rather than addressing the systemic issues in mainstream innovation ecosystems (McAdam et al., 2019). To achieve true inclusivity, formal and informal institutions must support diverse innovators and innovations (Ozkazanc-Pan & Muntean, 2021).

Informal institutions, including societal norms and cultural perceptions, significantly influence the innovation landscape. For example, gender norms shape how stakeholders, such as venture capitalists and policymakers, perceive women entrepreneurs and how these entrepreneurs perceive their potential (Stoker et al., 2024). Media representations and stereotypes further reinforce these norms, either perpetuating biases or challenging them by showcasing diverse role models. Such stereotypes, in turn, affect decision-makers' perceptions in the ecosystem, such as financing bodies and policymakers (WEKH, 2023). Addressing these cultural-cognitive barriers is crucial to normalizing the presence of equity-deserving groups the innovation ecosystems (Brush et al., 2019).

Market conditions are a critical factor influencing innovation and inclusivity. During periods of technological uncertainty, markets expand, attracting a diverse range of firms. However, as dominant designs emerge, market power often consolidates among established players, limiting opportunities for new entrants (MacQuarrie et al., 2020). Equity-deserving groups are frequently under-represented in these markets, particularly in technology-driven sectors, where access to capital, networks, and resources remains a persistent challenge.

Government regulations and programs can help address these disparities. For example, the Government of Canada has included self-employment as an eligible criterion for subsidy programs like the Canadian Digital Adoption Program. This recognition is significant, as women and other equity-deserving groups are more likely to be self-employed. Such initiatives enable broader participation in the market, creating opportunities for equity-deserving groups to contribute to and benefit from innovations (Haussen & Schlegel, 2020; Rybczynski, 2015; Women Entrepreneurship Knowledge Hub, 2024).

Building an inclusive science, technology, and innovation culture

“Culture eats strategy,” but shaping culture is no easy task. Building a culture of inclusivity is crucial for a vibrant and active STI ecosystem, as culture shapes the norms and systems that influence participation and innovation. While Canada is globally recognized for its robust culture of innovation and entrepreneurship – ranked among the strongest by the GEM – the persistent association between STEM, entrepreneurship, and men reflects deeply embedded societal biases (Jennings, Rahman & Dempsey, 2023). Addressing these biases requires a broader communication of the diversity of entrepreneurial activities, celebration of successes from equity-deserving groups, and a shift in focus from invention to innovation. These objectives demand coordinated efforts across sectors and stakeholders to foster a more inclusive and dynamic innovation landscape.

Inclusive governance is essential for advancing a culture of inclusivity. A significant gap in current innovation frameworks is the limited focus on governance. Scholars highlight the importance of inclusive governance in aligning stakeholder interests through consultations, advisory councils, and coordinated policy frameworks (Schillo et al., 2017; Specht & Crowston, 2022). However, traditional governance approaches often perpetuate existing structures rather than critically interrogating and reimagining them. To address the uncritical perpetuation of existing structures, it is essential to challenge entrenched systems and expand traditional notions of innovation. For example, Schillo and Robinson (2017) advocate for governance processes that reflect societal preferences and concerns, adhering to the principles of RRI. Other scholars suggest that achieving true inclusivity will require transformative changes in the innovation ecosystem (Kuhlmann & Rip, 2014). By integrating inclusivity into culture and governance, the STI ecosystem can evolve to embrace diverse perspectives, better reflect societal values, and drive sustainable and equitable innovation.

Strengthening equity in research and development

Research and development capacity has traditionally been framed around generating new knowledge and innovations, guided by metrics such as research funding, publication outputs, patents, and technological advancements. These conventional approaches prioritize scientific excellence and cutting-edge technologies, emphasizing measurable outcomes such as the number of research projects, academic publications, or industry collaborations (CCA, 2018). While these models are instrumental in driving innovation with technical and methodological rigour, they often overlook the crucial role of EDI in shaping research design and implementation. To build an inclusive STI ecosystem, it is essential to embed EDI principles throughout the entire research process – from problem inception to knowledge dissemination – ensuring that R&D efforts reflect and serve the diverse populations they aim to benefit (NSCERC, n.d.).

Advancing equity in R&D begins with rethinking how problems are framed, and teams are built. Applying an inclusive lens involves integrating EDI principles into research methods, data collection, community engagement, and knowledge mobilization. Incorporating EDI requires understanding how research topics, terminology, assumptions, and models affect diverse populations. Diverse research teams bring a broad range of perspectives that can expand approaches and foster innovative, high-impact ideas. These teams are often more effective, exhibit fewer biases, and make better decisions, demonstrating the value of equity in building a more inclusive STI ecosystem (Specht & Crowston, 2022).

The Tri-Agency EDI Action Plan outlines measures to ensure equitable access to training, resources, and networks for students, faculty, and partners, fostering inclusivity in the STI ecosystem. Specific EDI guidelines have been established for programs like the Canada Research Chairs, along with strategies and targeted initiatives from SSHRC, NSERC, and CIHR. These include training programs such as the CIHR Sex and Gender in Health Research online training model and government funding frameworks like the Strategic Innovation Fund and Strategic Science Fund, which now incorporate mandatory EDI requirements. Despite these advancements, gaps remain in integrating EDI into research processes, such as problem framing, methodology, data collection, knowledge mobilization, and commercialization. However, limited attention is still paid to the research process itself, and there are gaps in the accountability frameworks and institutional reporting requirements. Mitacs has also developed and implemented a comprehensive EDI framework. Strengthening accountability frameworks and institutional reporting requirements is vital to closing these gaps and advancing equity across the STI ecosystem.

While many efforts focus on issues of representation, greater emphasis is needed to streamline research processes, starting with problem framing, methodology, data collection, and strategies for knowledge mobilization and commercialization. Evidence-informed research models can be designed to create targeted strategies for driving policy and practice changes. Incorporating EDI into research design requires understanding how research topics, terminology, assumptions, and models affect diverse populations. Diverse research teams can broaden perspectives, foster innovation, and generate high-impact ideas, as they are more effective, exhibit fewer biases, and make better decisions (Hattery et al., 2022).

The CIHR exemplifies leadership in embedding EDI principles throughout the research process, setting a global standard for inclusive R&D. The CIHR approach includes incorporating EDI into research conceptualization, study team formation, methodological design, study population selection, data collection and analysis, and knowledge mobilization (Hattery et al., 2022). The CIHR has particularly advanced the integration of sex and gender considerations into healthcare research, recognizing the significant risks posed when diversity is not adequately considered across all stages of research, from foundational studies to intervention development and application. Such leadership underscores the importance of embedding equity to advance a more inclusive STI ecosystem.

The principle of “Nothing About Us Without Us” highlights the need to actively involve the communities or populations being studied in every aspect of the research process (Koontz et al., 2022; Rahman et al., 2022). This participatory approach emphasizes equitable representation, inclusion, and ethical collaboration through methodologies like participatory action research (PAR). Key expectations include inclusion, respect for autonomy, and alignment with community needs. Effective community engagement also involves ensuring research outcomes are accessible and actionable for stakeholders. Long-term collaboration, equitable sharing of power and resources, and culturally relevant co-creation processes enhance the sustainability and inclusivity of STI solutions.

Research ethics also play a critical role in fostering equity in the STI ecosystem (Appiah, 2010). The do no harm principle serves as a foundational guideline to prevent harm to participants, communities, and the environment, particularly for equity-deserving groups (Favaretto et al., 2020). Ethical research design involves conducting thorough risk assessments, obtaining informed consent, and addressing the unique needs of vulnerable populations. Long-term impact assessments and transparent reporting reinforce accountability and ethical practices (Appiah, 2010; Horton, 2002).

Using an EDI lens in research ethics is particularly important for data collection and analysis when working with communities that have faced historical discrimination, exploitation, or genocide. Building trust, ensuring transparency, and maintaining ongoing communication with these communities is crucial to fostering equitable research partnerships (NSERC, 2018). Addressing barriers such as literacy challenges, limited access to technology, or time constraints further promotes inclusivity. By adopting diverse strategies to engage these communities effectively, researchers can maximize the impact of their work while respecting the lived experiences and perspectives of those involved.

Strengthening equity in R&D is essential to advancing an inclusive STI ecosystem. It ensures that research outcomes are relevant, sustainable, and reflective of the diverse populations they aim to serve (Yang et al., 2022). Aligning research goals with community needs, fostering continuous reflection and adaptation, and embedding equity throughout the research process enhance innovation while creating a more just and inclusive ecosystem. This commitment to equity drives impactful STI solutions and lays the foundation for long-term sustainability and inclusivity across all sectors.

Embedding equity, diversity, and inclusion across the innovation lifecycle

A strategic approach to advancing an inclusive STI ecosystem requires carefully designed interventions across all stages of the innovation lifecycle, including procurement and commercialization.

Enhancing human capital and skills

Enhancing human capital and skills is crucial for advancing EDI in the STI ecosystem. Equitable, diverse, and inclusive approaches to human capital – the skills, knowledge, and experience in the labour force – empowers equity-deserving groups, broadens participation, and fosters equitable opportunities for innovation. Ensuring that human capital is equitable, diverse, and inclusive requires sustained commitment to education, training, and structural reform to strengthen innovative capacity and sustainability in the STI ecosystem.

Human capital drives an organization’s capacity to innovate. Founders’ identities influence whether they pursue radical change or adapt to external shifts (Zuzul & Tripsas, 2020). Diverse teams excel at solving complex problems and delivering unique insights (UBC, n.d.; Zuzul & Tripsas, 2020). For example, diverse organizations are 87% more likely to make effective decisions and 75% faster at bringing products to market, highlighting the direct link between diversity and organizational success (Korn Ferry Research, 2021).

Despite Canada's high post-secondary education rates, STI impacts fall short of its potential. Skills gaps persist in research commercialization, entrepreneurship, and business acumen. Addressing these gaps requires improved support systems, mentoring, coaching, and experiential learning to equip equity-deserving groups with practical skills and networks that will strengthen the innovation ecosystem.

At the same time, one of the principal barriers to women, Indigenous Peoples and other equity-deserving groups is the lack of representation and the persistence of bias among decision-makers and gatekeepers at every level of the system – government agencies, financial institutions, educational institutions, and more. Concerted efforts to address individual knowledge, attitudes and behaviours coupled with structures to reinforce equitable and inclusive practices are key.

Academic institutions play a vital role in developing human capital, advancing research, fostering entrepreneurship, and sharing knowledge. However, systemic barriers persist for equity-deserving groups. Tri-council policies have improved inclusivity, but racism, unconscious biases, and precarious work conditions continue to disadvantage academics from equity-deserving groups. These biases manifest as white normativity, tokenism, and limited opportunities that further entrench disparities. University-industry collaborations drive innovation by pooling diverse resources and perspectives, enhancing creativity and outcomes (OECD & Eurostat, 2018). While commercialization is traditionally viewed as matching market needs with technical possibilities (Freeman, 1982), academics from equity-deserving groups engage less frequently and in different ways. Social support and representation in their fields significantly boost their participation. Expanding commercialization pathways to include entrepreneurial opportunities for equity-deserving groups is essential. Broadening approaches to commercialization and startup support – involving faculty, graduate students, postdoctoral scholars, and research associates – can foster equitable and sustainable innovation (University of Waterloo, n.d.).

Canada's strong educational foundation provides an opportunity to address these challenges. Post-secondary education must evolve to meet diverse population needs and STI demands. For example, Indigenous Peoples face greater challenges, being half as likely to graduate from PSE institutions. While education is critical, it alone cannot achieve EDI goals. Coordinated efforts to combat discrimination, address biases, and dismantle systemic barriers are essential. Curricula and pedagogy must adopt an EDI lens to increase EDG participation in STEM and highlight diverse examples, such as women entrepreneurs, to inspire learners. Notably, entrepreneurship and innovation textbooks often lack representation of equity-deserving groups and non-tech entrepreneurs, underscoring the need for inclusive materials.

Addressing gaps in mentoring, coaching, and experiential learning is also key. These efforts equip individuals with the skills and networks needed for success in the STI ecosystem. Education must be supplemented with upskilling, reskilling, and employment pathways. Skilled trades, increasingly vital to STI, require strategies to develop innovation and entrepreneurial skills, including digital and financial literacy, business planning, and entrepreneurial mindsets. Post-secondary education must build the competencies – knowledge, skills, and attitudes – needed for equity-deserving groups to thrive in STEM and the STI ecosystem.

Systemic change in institutions is equally important. Biases among decision-makers in government agencies, financial institutions, and academia perpetuate inequities. Shifting attitudes and behaviours while implementing fair and inclusive structures is critical. Addressing wage gaps, status disparities, and precarious work for equity-deserving groups fosters a more equitable environment.

Closing gaps in financing and support

Financing and support in the STI ecosystem occur at various stages and from multiple sources. These include funding for basic science and research through tri-council grants and other federal government instruments aimed at supporting industrial R&D and commercialization, such as Innovation Canada, IRAP, Regional Development Agencies loans, matching programs and grants, tax credits, and funding targeted at intermediaries like incubators and accelerators. Additionally, direct, and indirect investments by industry—particularly large corporations—play a significant role. These corporations not only invest in their internal R&D but also fund research at PSE institutions and support startups and spin-offs. Furthermore, financing instruments directed at startups include grants, loans, angel investments, venture capital, emerging community investment models, forgivable loans, and crowdsourcing (Buchbinder & Newson, 1990; Government of Canada, 2024; ISED, 2024; NRC, 2023).

Cultivating an inclusive STI ecosystem requires applying an EDI lens to every stage of financing and support. The issues of definition and framing in funding goals, program design, implementation, and evaluation play a critical role in creating an inclusive financing ecosystem. International organizations and governments are adopting strategies to make STI financing more inclusive. These include establishing dedicated funds, offering grants and subsidies, and creating tax incentives that encourage participation from equity-deserving groups. For example, the World Bank and WEF have implemented several inclusive financing programs. In Canada, initiatives such as the Women Entrepreneurship Loan Fund, the WES Ecosystem Fund, the Black Entrepreneurship Loan Fund, and the 2SLGBTQ+ Entrepreneurship Ecosystem Fund are designed to address inequities in financing. Beyond targeted programs, regulatory and risk frameworks, voluntary codes, and increased transparency are essential to embed inclusion sustainably, ensuring these programs achieve lasting impact.

Despite Canada's diverse population, there remains a pronounced diversity gap in financing. Equity-deserving groups face significant barriers to accessing grants, loans, and investments, which are compounded by structural and systemic inequities. Research highlights the complex factors contributing to these barriers. Technology-focused businesses, for example, typically require substantial investments with high levels of risk and reward (Zider, 1998). Inclusive innovation approaches, including microfinancing, microgrants, forgivable loans, crowdsourcing, and community-based funding models, are still in their early stages of development and require further support to address these gaps (National Research Council, 2014).

Access to startup funding is particularly challenging for women, Indigenous Peoples, and other equity-deserving groups. Structural barriers and systemic biases embedded in financing systems exacerbate these challenges. For example, women- and Indigenous-owned businesses are less likely to be incorporated, which poses significant hurdles in accessing funding. Only 19% of Indigenous business owners rely on bank loans and credit to start new businesses, with 65% forced to rely on personal savings, limiting their growth potential and operational capacity (Daly, 2023). Traditional credit risk assessment frameworks, such as the five “Cs” of credit, are based on historical patterns that perpetuate systemic bias. Even Business Development Canada does not disclose the proportion of its funding allocated to companies that are majority-owned by women or Black entrepreneurs, nor does it provide details on investment size or terms.

New financing models have been developed by intermediary organizations, such as the Women Enterprise Organizations of Canada and the Federation of African Canadian Economics (FACE), as well as an extensive network of Aboriginal Financing Institutions, often with integrated wraparound supports. However, significant gaps remain in ensuring equitable access to funding. Venture capital funding in Canada also highlights a stark gender disparity—only 4% of venture capital goes to majority women-owned businesses (Davenport, 2024; Nwaokocha, 2021). Currently, only 7% of partners at major venture capital firms are women, and portfolios with significant representation of women founders or managers are statistical outliers (Aidis & Schillo, 2017).

A critical gap in Canada is the absence of a framework requiring transparency in financial institutions' funding practices. Research into funds targeting women entrepreneurs has revealed discrepancies, such as funding being allocated to businesses where women are minority, rather than majority, owners. Internationally, initiatives like the UK's Investing in Women Code—now promoted by the World Bank—require participating financial institutions, venture capitalists, and angel investors to report on the proportion of their funding directed at women entrepreneurs and their success rates (Hollinrake & Badenoch, 2023). Canada announced its intention to adopt similar measures in Budget 2021, but concrete action has yet to follow.

Addressing these gaps in financing and support is essential to advancing EDI in the STI ecosystem. Closing these gaps will ensure that the benefits of STI reach all members of society, particularly equity-deserving groups that have historically been excluded from financial opportunities. By fostering greater transparency, creating inclusive funding models, and addressing systemic barriers, Canada and other nations can build an equitable STI ecosystem that supports innovation, economic growth, and social progress for all.

Procurement

By leveraging their purchasing power, governments and organizations can channel resources to equity-deserving groups, fostering inclusive and resilient supply chains by promoting equitable participation and mitigating systemic inequities (Eshkenazi, 2024). In Canada, governments and large corporations alike have taken steps to integrate supplier diversity into their procurement practices. More than 40% of large corporations, including multinationals, report having supplier diversity programs (CCDI, 2016). The Canadian government, which spends over $200 billion annually on goods and services, has implemented several initiatives to drive inclusion through procurement.

Examples include:

- **Procurement Strategy for Indigenous Business (PSIB):** This policy mandates that at least 5% of the total value of government contracts be awarded to Indigenous businesses.
- **Black Business Procurement Pilot:** Launched in 2021, this initiative provides bidding opportunities for small Black-owned or Black-led businesses, covering 12 procurement opportunities across Canada.
- **Social Procurement Policy:** Introduced by Public Services and Procurement Canada (PSPC) in May 2021, this policy enables the collection of supplier diversity data to enhance supplier diversity initiatives.

Despite the progress, several challenges persist in the implementation of supplier diversity programs. Vetting diverse suppliers remains a complex issue, even with certification bodies such as the CCIB, the Canadian Aboriginal and Minority Supplier Council, WEConnect, and the Canadian Gay and Lesbian Chamber of Commerce. While third-party certifications are commonly used to verify supplier eligibility, no verification process is entirely infallible. The gaps in verification processes create inconsistencies that must be addressed to ensure the effectiveness of supplier diversity programs.

Government initiatives, such as Innovation Canada's Challenge programs, have created opportunities for scaling innovations. However, these programs often focus heavily on large-scale implementations and technology-based solutions, potentially excluding other forms of innovation and equity-deserving groups.

Commercialization

Commercialization is a pivotal stage in the innovation lifecycle, as it bridges the gap between research and market adoption, ensuring that innovative ideas do not remain confined to laboratories or academic journals but instead contribute to real-world solutions. Various interventions, including incubators, accelerators, and government programs, have been designed to support commercialization efforts, translate research into practical applications, and address challenges associated with market entry.

Interventions that support commercialization are critical for generating economic impact but often operate in narrow frameworks focusing on technology-based solutions. The emphasis on technology-based solutions creates significant gaps for other forms of innovation, such as tools, processes, or methodologies that do not fit traditional patentable models yet hold substantial economic and social potential. Post-secondary institutions frequently struggle to address commercialization beyond technology, overlooking valuable innovations in disciplines like the social sciences, arts, and humanities (University Affairs, 2025).

Traditional commercialization pathways often assume a linear lab-to-market process, where technologies are developed first, and a market is sought later. This approach, influenced by a STEM-dominated bias, can miss opportunities to address market-driven needs through iterative and community-centred processes. Research on innovation underscores the importance of balancing "push" factors, where innovations are driven by new technologies, with "pull" factors, where innovations emerge in response to market demands (Witze, 2015). Evidence suggests that up to 50% of innovation in large corporations stems from users or customers, highlighting the need for more interactive and partnership-driven models of innovation (Ciborra & Andreu, 2001). Additionally, factors like regulatory changes, systemic shocks, recombinant innovation, crowdsourcing, and community-driven initiatives play an essential role in fostering innovation outside traditional pathways.

In Canada, incubators and accelerators are widely regarded as key vehicles for commercialization, but their impact is highly variable and subject to debate. Most focus on technology-based startups, perpetuating exclusionary practices that marginalize other sectors such as food, music, fashion, real estate, and retail. Moreover, gendered, and racialized structures in these ecosystems maintain systemic barriers. For example, even in social impact accelerators, gendered biases in selection processes often result in better outcomes for men than for women (Yang et al., 2020).

Specialized programs have emerged to address these disparities. Initiatives like DMZ's Women and Black Innovation Programs, the Women+ Entrepreneur Incubator powered by Elevate and The Firehood, Startup Women, and Futurpreneur's Black and Indigenous Entrepreneur Startup Programs provide targeted support to equity-deserving groups. The 2SLGBTQI+ Entrepreneurship Program is another example of efforts to create inclusive spaces. However, these programs remain small-scale, with limited resources, networks, and financing access. While incubators have begun focusing on diversity, the exclusionary cultures and structural barriers in many contexts remain significant.

Despite their economic significance, the lack of support for non-technology-based sectors highlights the need for a broader systemic change. Some incubators, like the I-INC Network of University-linked incubators, have started addressing these challenges by adopting inclusive playbooks covering eligibility criteria, mentorship, and creating equitable spaces. Research has shown that many women entrepreneurs prefer support models outside of traditional incubation and acceleration, further emphasizing the need for alternative approaches (Davidson & Hume, 2020).

To create a more inclusive and effective innovation ecosystem, interventions must prioritize flexible models that address diverse disciplines, community needs, and systemic inequities. Expanding support for under-represented sectors and fostering inclusive cultures in incubators and accelerators is critical. While targeted programs represent progress, broader systemic change is necessary to ensure that commercialization processes unlock the full potential of all innovations, driving economic and societal impact across a wide range of industries and communities.

Advancing collaborative innovation and knowledge creation

Traditional lab-to-market models often assume one-way knowledge flows despite growing evidence that “spaghetti models” are often more apt in explaining how network collaboration and knowledge flows occur (Ciborra & Andreu, 2001). Despite evidence supporting the need for complex, collaborative, and iterative approaches to innovation, many technology-driven models prioritize user needs, demand-side considerations, and community relationships only at the final stages of development. This approach risks producing inventions that fail and that lack relevance to diverse populations. While it is often time-consuming and requires a long-term view, there is evidence of the benefits of early collaboration and knowledge sharing in advancing innovation. Knowledge spillovers – transferring ideas and innovations between organizations and sectors – are critical for building resilient and competitive innovation ecosystems (Ponds, van Oort & Frenken, 2010). Knowledge spillovers enable the broader dissemination of insights, fostering innovation that bridges gaps and enhances system-wide resilience. For example, research on integrated circuit ecosystems demonstrates how such spillovers promote industrial competitiveness by connecting stakeholders and facilitating shared learning (Zhou, Zu & Liu, 2024).

Considerable research has examined the factors influencing effective collaboration in research and innovation, including shared goals, intent to learn, transparency, absorptive capacity, and the importance of trust and mutual benefit (Hamle, 1991). There are notable differences in engaging users in business-to-business versus consumer contexts, but various mechanisms have been defined, including co-development, research collaborations, design processes with “extreme users,” crowdsourcing and competitions for open innovation and more. These mechanisms enable a wide range of perspectives to shape the innovation process, increasing the likelihood that outcomes will be impactful and inclusive (Cricelli et al., 2022).

Engaging communities as active partners from the outset is particularly important for advancing inclusivity. Methodologies such as Community-Based Participatory Research (CBPR) and action research shift the traditional power dynamic between researchers and communities. These approaches align research with real-world needs, reduce disparities, and enhance the social and economic relevance of innovations. By fostering trust and inclusivity, such partnerships ensure that research outcomes are actionable and responsive to the needs of diverse populations (Duke, 2020).

Recognizing and valuing diverse types of knowledge, including lived experiences and Indigenous ways of knowing, further enriches the innovation ecosystem. Indigenous knowledge systems, for example, offer long-term perspectives and sustainability insights that are often missing in traditional models. Their integration can address significant gaps in current innovation approaches, helping to mitigate unintended consequences and ensuring that innovations are not only effective but also equitable and sustainable (Reid, 2021). However, the limited incorporation of such knowledge in current models often leads to innovations that fail or create harm by neglecting diverse needs (Peddi, Ludwig & Dessein, 2023).

Advancing collaborative innovation is essential for an inclusive STI ecosystem. Early engagement, knowledge sharing, and diverse perspectives foster resilience, relevance, and equity in innovation. While requiring a long-term vision, an early engagement approach delivers significant societal impact and creates an STI ecosystem that better serves diverse stakeholders.

Fostering inclusive governance structures

The growing focus on governance in the STI ecosystem highlights the need for inclusive structures that ensure equitable participation and decision-making. The increasing urgency around the need for more inclusive governance has emerged partly due to global inequities between the Global North and South, sparking discussions on how governance can better address these disparities (Kalkanci et al., 2019; Vazquez-Brust et al., 2013). Inclusive governance is also critical in addressing pressing sectoral priorities, such as sustainability, where government interventions are pivotal (Kalkanci et al., 2019).

The STI ecosystem is inherently complex, comprising a diverse array of actors, institutions, networks, and processes operating across multiple levels. These include governments at various tiers, academic institutions, private sector entities, entrepreneurs, intermediaries, and communities, all of which contribute to shaping the system’s goals, policies, and processes. This diversity, while enriching, also complicates the establishment of clear governance mechanisms.

Governance in the STI ecosystem occurs across multiple arenas where decisions about goals, policies, resource allocation, and operational processes are made. To foster inclusivity, these governance structures must prioritize principles such as representation, participation, and equity. Fostering equitable governance requires a critical examination of who participates in decision-making processes and ensuring that individuals from equity-deserving groups are genuinely engaged rather than tokenized.

A fundamental challenge lies in defining governance in the STI context, identifying its key elements, and assessing how various bodies reflect or neglect EDI considerations. This applies to both broad advisory and policy-making bodies as well as individual organizations and institutions that play essential roles in the ecosystem.

Although some entities, such as the Tri-Council research agencies, have made significant strides toward inclusive governance, many other stakeholders in the STI ecosystem must rethink and redesign their structures. Embedding inclusivity requires a commitment to accountability to communities, power sharing, co-creation, and collaborative approaches. Such efforts will ensure that the STI ecosystem evolves as a truly equitable and inclusive space capable of addressing the needs and priorities of diverse populations.

Conclusion

This report provides a comprehensive analysis of EDI in Canada's STI ecosystem. It examines the representation of equity-deserving groups across different system components and applies a gender and diversity analysis at multiple levels to develop effective EDI strategies that support a high-functioning STI ecosystem.

Despite some progress towards inclusivity, persistent biases and systemic barriers continue to limit the participation of equity-deserving groups in Canada's STI ecosystem. A significant challenge is in the common framing of EDI as conflicting with merit and excellence despite evidence showing that diverse perspectives enhance scientific rigour and innovation outcomes. Similarly, technology-focused frameworks often adopt narrow definitions of innovation, prioritizing technical advancements while overlooking adoption processes and systemic barriers that exclude under-represented groups in STEM. Without a multidisciplinary approach to responsible technology adoption, innovation ecosystems risk reinforcing existing disparities rather than fostering inclusivity.

EDI is crucial for creating equitable research environments and cultivating a diverse next generation of innovators. Canada faces a growing need for STEM workers, with over 320,000 expected to retire within the next decade. However, equity-deserving groups remain under-represented in key sectors such as ICT, engineering, and biotechnology. Addressing these disparities through targeted inclusion policies, equitable financing, and stronger representation in technical and executive roles is essential for fostering sustainable innovation and economic growth.

While post-secondary enrollment rates of women in STEM fields have increased significantly, particularly in science and technology programs, their declining participation in the labour force and leadership positions indicates a “leaky pipeline” weakening Canada’s science and innovation capacity. Gendered notions and unsupportive educational environments discourage women from pursuing STEM education. Similarly, although racialized students comprise the largest share of equity-deserving groups in STEM programs, a lack of an EDI lens in curricula hinders their higher participation and success. Indigenous students are half as likely to graduate from post-secondary institutions, indicating a need to combat discrimination and dismantle systemic barriers. Post-secondary education must also equip students with competencies critical for STI success, such as financial literacy, business planning, and entrepreneurial skills through mentoring, coaching, and experiential learning.

Understanding EDI in the STI ecosystem extends beyond demographic representation. A gender and diversity lens must be applied to policies, processes, and organizations to uncover biases and barriers. Innovation extends beyond STEM, where women, Indigenous Peoples, specific racialized groups, and persons with disabilities are under-represented due to occupational segregation. Global definitions of innovation emphasize not just technology and economic outcomes but also environmental and social impacts. Incorporating commercialization and technology adoption into the innovation ecosystem, alongside disciplines beyond STEM, will enhance inclusivity.

Linking entrepreneurship with innovation provides insight into participation, benefits, and persistent barriers. Entrepreneurs serve as a bridge between innovative concepts and real-world applications. For example, Canadian women entrepreneurs have demonstrated high potential in FemTech, contributing to Canada’s ranking among the top five countries globally with the highest number of FemTech companies. Women are more represented in food, services, and retail sectors, while Black-owned businesses are more likely to be in the transportation and warehousing—sectors often overlooked for R&D investments and innovation support. Similarly, rural innovation is frequently linked to entrepreneurship and sustainable development but remains underfunded.

Effective strategies must operate at the macro (societal) level, shaped by regulatory, social, and political factors influencing entrepreneurship and innovation. Government policies, particularly those addressing work-family conflicts, taxation, childcare, and financial regulations, play a crucial role in fostering inclusive entrepreneurship. A coordinated, systemic policy approach is needed to remove barriers and strengthen enablers, ensuring meaningful and sustained change in EDI within the innovation landscape. The OECD recommends inclusive policy design, including investments in institutional research, robust regulatory frameworks, and innovations serving equity-deserving groups. Supporting intermediary institutions further enhances inclusivity and economic growth.

STI policies, programs, and services must integrate EDI considerations at all stages, ensuring inclusion is a strategic priority rather than a compliance exercise. Equity in R&D is essential for fostering an inclusive STI ecosystem where research reflects and benefits diverse populations.

Incorporating EDI into research design, team composition, and knowledge dissemination reduces biases and broadens perspectives. While Canada has made progress through initiatives like the Tri-Agency EDI Action Plan, accountability frameworks and institutional reporting require further development. Principles such as RRI, "Nothing About Us Without Us," the do no harm ethical research approach, and community-based participatory research promote inclusive and impactful research.

Canada must go beyond policy interventions to challenge ingrained institutional structures and build an equitable innovation landscape. Strengthening governance, expanding market opportunities for under-represented entrepreneurs, and fostering a culture that values diverse innovation are essential. Advancing EDI in the STI ecosystem also requires embedding inclusion into financing and support structures. Equity-deserving groups face systemic barriers to accessing grants, loans, and investments, exacerbated by biases in traditional credit assessment models. Strengthening equity in R&D will drive impactful, inclusive, and ethically responsible STI advancements. Inclusive standards and governance should be applied to STI infrastructure in rural and remote communities, government procurement, commercialization, IP rights, and regulatory standards.

Increasing the commercialization of innovation to bolster outputs of the STI ecosystem requires a focused approach to improve IP protections and concerted support for diverse inventors. Embedding equity metrics in IP governance, revamping financing models to increase R&D capacity of businesses owned by members of equity-deserving groups, recognition of diverse forms of innovations, and creating collaborative networks that amplify diverse voices in innovation can strengthen and grow Canada's IP and patent activity. Key actions include targeted IP education for equity-deserving groups, equity-responsive funding mechanisms, and incentives for patent filings led by various equity-deserving groups. Fostering communities of practice and mentorship programs to support participation can have a positive impact by boosting representation of diverse groups in IP development and commercialization of innovation. By aligning IP reforms with broader STI inclusivity goals, Canada can invigorate innovation resilience and collaboration in underserved communities and ensure ethical, inclusive advancements across all forms of innovation.

Collaborative innovation is essential for building an inclusive and resilient STI ecosystem. Traditional "lab-to-market" models often neglect early user engagement and knowledge sharing, resulting in innovations that fail to address the needs of equity-deserving. Research highlights the benefits of iterative, networked collaboration, where knowledge spillovers enhance competitiveness and system-wide resilience. Community-based participatory research and co-development approaches shift power dynamics, ensuring innovations align with real-world needs. Recognizing diverse knowledge systems, including Indigenous perspectives, fosters sustainability and equity. Moreover, requiring long-term investment, and collaborative innovation strengthens impact by integrating multiple perspectives, ultimately creating more effective and inclusive solutions.

Translating commitments to inclusion into systemic, responsive, and impactful policies and programs requires coordinated efforts across multiple levels of government and institutions. A systems perspective can help identify and address barriers while strengthening enablers to create an equitable innovation ecosystem. This report provides comprehensive insights into the current state of EDI in the STI ecosystem and identifies strategies to enhance inclusivity, positioning Canada as a global leader in innovation.

Reference List

Abbes, C., Lafrance-Cooke, A., & Leung, D. (2023, February 22). *Patenting activity of women-owned businesses in Canada*. https://www150.statcan.gc.ca/n1/pub/36-28-0001/2023002/article/00003-eng.htm

Abraham, M. (2020). Gender-role incongruity and audience-based gender bias: An examination of networking among entrepreneurs. *Administrative Science Quarterly, 65*(1), 151–180. https://doi.org/10.1177/0001839219832813

Acs, Z. J., Stam, E., Audretsch, D. B., & O'Connor, A. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics, 49*(1), 1-10. https://doi.org/10.1007/s11187-017-9864-8

Addo, P. (2017). 'Is it entrepreneurship, or Is it survival?': Gender, community, and innovation in Boston's Black immigrant micro-enterprise spaces. *Societies, 7*(3), 20. https://doi.org/10.3390/soc7030020

Aernoudt, R. (2004). Incubators: Tool for entrepreneurship? *Small Business Economics, 23*(2), 127-135. https://doi.org/10.1023/B:SBEJ.0000027665.54173.23

AFOMA Marketplace. (2024, May 25). *Does the Canada Digital Adoption Program (CDAP) need a revamp?* A Desire for More Inclusion. https://afomamarketplace.com/blogs/canada-digital-adoption-program-inclusion

Aidis, R., & Schillo, R. S. (2017). Gender, leadership and venture capital: measuring women's leadership in VC firm portfolios. *International Journal of Gender and Entrepreneurship, 9*(2), 110–135. https://doi.org/10.1108/ijge-08-2016-0027

AI Guides, Your independent, AI Advisory Guides. (2023, January 13). *AI business strategy – AI.*

Akbaritabar, A., Castro Torres, A. F., & Larivière, V. (2024). A global perspective on social stratification in science. *Humanities and Social Sciences Communications, 11*(1), 914 - 10. https://doi.org/10.1057/s41599-024-03402-w

Al-Qahtani, M., Zguir, M. F., Ari, I., & Koç, M. (2022). Female Entrepreneurship for sustainable economy and development - Challenges, drivers, and suggested policies for resource-rich countries. *Sustainability, 14*(20), 13412. https://doi.org/10.3390/su142013412

Albort-Morant, G., & Ribeiro-Soriano, D. (2016). A bibliometric analysis of international impact of business incubators. *Journal of Business Research, 69*(5), 1775-1779. https://doi.org/10.1016/j.jbusres.2015.10.054

Aliakbar Akbaritabar, Castro, F., & Larivière, V. (2024). A global perspective on social stratification in science. *Humanities and Social Sciences Communications, 11*(1). https://doi.org/10.1057/s41599-024-03402-w

Allen, D. N., & Rahman, S. (1985). Small business incubators: A positive environment for entrepreneurship. *Journal of Small Business Management, 23*(1985), 12-23.

Ambepitiya, K. R. (2016, March). The role of women entrepreneurs in establishing sustainable development in developing nations. *World Review of Business Research, 6*(1), 161-178. https://doi.org/10.4038/kjhrm.v8i2.7

Anderson, E., Easson, K., Kharas, K., Kum, J., & Cimon-Paquet, C. (2022, May). *EDI at every level: Inequities and under-representation in STEM.* Canadian Science Policy Centre. https://sciencepolicy.ca/posts/edi-at-every-level-inequities-and-under-representation-in-stem/

Annabi, H., & Lebovitz, S. (2018). Improving the retention of women in the IT workforce: An investigation of gender diversity interventions in the USA. *Information Systems Journal, 28*(6), 1049–1081. https://doi.org/10.1111/isj.12182

Aparicio, S., Audretsch, D., & Urbano, D. (2020, February 28). Does entrepreneurship matter for inclusive growth? The role of social progress orientation. *Entrepreneurship Research Journal, 11*(4), 20190308. https://doi.org/10.1515/erj-2019-0308

Appiah, K. A. (2010). *Experiments in ethics.* Harvard University Press. https://www.hup.harvard.edu/books/9780674034570

Arcuri, M. C., Di Tommaso, C., & Pisani, R. (2024). Does gender matter in financing SMEs in green industry? *Research in International Business and Finance, 69*, 102222. https://doi.org/10.1016/j.ribaf.2024.102222

Arnold, E., Paunov, C., Planes-Satorra, S., Schwaag Serger, S., & Mackle, L. (2023). Navigating green and digital transitions: Five imperatives for effective STI policy. *OECD Science, Technology and Industry Policy Papers*, *162*. https://doi.org/10.1787/dffb0747-en

Atal, N., Berenguer, G., & Sameer Borwankar. (2019). Gender diversity issues in the IT industry: How can your sourcing group help? *Business Horizons, 62(*5), 595–602. https://doi.org/10.1016/j.bushor.2019.04.004

Atkinson, R. D. (2024, October 15). *Studies Show AI Triggers Delirium in Leading Experts*. Information Technology and Innovation Foundation (ITIF). https://itif.org/publications/2024/10/15/studies-show-ai-triggers-delirium-in-leading-experts/

Atkinson, R. D., & Zhang, L. (2024, April 29). *Assessing Canadian innovation, productivity, and competitiveness.* Information Technology and Innovation Foundation (ITIF). https://itif.org/publications/2024/04/29/assessing-canadian-innovation-productivity-and-competitiveness/

Bayati, M., Noroozi, R., Ghanbari-Jahromi, M., & Jalali, F. S. (2022, August 30). Inequality in the distribution of Covid-19 vaccine: A systematic review. *International Journal for Equity in Health, 21*, Article 122. https://doi.org/10.1186/s12939-022-01729-x

B.C Ministry of Education and Child Care. (2024, June). *Equity, inclusion and child care in B.C engagement report.* https://www2.gov.bc.ca/assets/gov/family-and-social-supports/child-care/info-partners-prov/inclusive-child-care/inclusion_equity_engagement_report.pdf

Bakker, R. M., & McMullen, J. S. (2023). Inclusive entrepreneurship: A call for a shared theoretical conversation about unconventional entrepreneurs. *Journal of Business Venturing, 38*(1), 106268. https://doi.org/10.1016/j.jbusvent.2022.106268

Banaji, M. R., Fiske, S. T., & Massey, D. S. (2021). Systemic racism: individuals and interactions, institutions and society. *Cognitive Research Principles and Implications, 6*, Article 82. https://doi.org/10.1186/s41235-021-00349-3
Banerjee, R., Reitz, J., & Oreopoulos, P. (2018). Do large employers treat racial minorities more fairly? An analysis of Canadian field experiment data. *Canadian Public Policy, 44*(1). https://doi.org/10.3138/cpp.2017-033
Barberstock, R. K. (2024, October 1). *Renewable energy projects in Indigenous communities: Balancing tradition and innovation*. Indigenous Climate Hub. https://indigenousclimatehub.ca/2024/10/renewable-energy-projects-in-indigenous-communities-balancing-tradition-and-innovation/
Barrachina, M. B., García-Centeno, M. D. C., & Calderón Patier, C. (2021). Women sustainable entrepreneurship: Review and research agenda. *Sustainability, 13*(21), 12047. https://doi.org/10.3390/su132112047
Baruah, B., & Gaudet, C. (2022, March). Creating and optimizing employment opportunities for women in the clean energy sector in Canada. *Journal of Canadian Studies, 56*(2), 240-270. https://doi.org/10.3138/jcs.2019-0010
BDC. (2019, May). *Measuring BDC's impact on clients.* (2008-2015). https://publications.gc.ca/collections/collection_2024/bdc/Iu134-28-2019-eng.pdf
Beauchamp, T. L., & Childress, J. F. (2019). Principles of biomedical ethics: Marking its fortieth anniversary. *The American Journal of Bioethics, 19*(11), 9-12. https://doi.org/10.1080/15265161.2019.1665402
Beaudry, C., & Larivière, V. (2016). Which gender gap? Factors affecting researchers' scientific impact in science and medicine. *Research Policy, 45*(9), 1790–1817. https://doi.org/10.1016/j.respol.2016.05.009
Beckman, C. M., Rosen, J., Estrada-Miller, J. & Painter, G. (2023). The social innovation trap: Critical insights into an emerging field. *Academy of Management Annals, 17*(2), 684–709. https://doi.org/10.5465/annals.2021.0089
Bećirović, S. (2023). Challenges and barriers for effective integration of technologies into teaching and learning. *SpringerBriefs in Education* (pp. 123–133). https://doi.org/10.1007/978-981-99-0444-0_10
Bergen, B. (2017, April 25). *Canada has a scale-up problem, not a start-up problem.* Centre for International Governance Innovation*.* https://www.cigionline.org/articles/canada-has-scale-problem-not-start-problem/
Bergman, B. J., & McMullen, J. S. (2022). Helping entrepreneurs help themselves: A review and relational research agenda on entrepreneurial support organizations. *Entrepreneurship Theory and Practice, 46*(3), 688-728.
Beroíza-Valenzuela, F., & Salas-Guzmán, N. (2024). STEM and gender gap: a systematic review in WoS, Scopus, and ERIC databases (2012–2022). *Frontiers in Education, 9*. https://doi.org/10.3389/feduc.2024.1378640
Birhane, A. (2022). *The unseen Black faces of AI algorithms. Nature, News and Views.* https://www.nature.com/articles/d41586-022-03050-7.pdf
BioTalent Canada. (2021). *Close-up on the bio-economy: Labour market intelligence – National report.* https://www.biotalent.ca/wp-content/uploads/BioTalent-Canada-LMI-National-Report-13OCT2021-1.pdf
BioTalent Canada. (2024). *Diversity, equity, and inclusion hold the key to the bio-economy's talent shortage.* https://www.innovatingcanada.ca/diversity-and-inclusion/women-in-stem/diversity-equity-and-inclusion-hold-the-key-to-the-bio-economys-talent-shortage/
BioTalent Canada. (2025). *Leaders in diversity: Recognizing the 2024-2025 I.D.E.A.L. biosciences employers.* https://www.biotalent.ca/news/leaders-in-diversity-recognizing-the-2024-2025-i-d-e-a-l-bioscience-employers/
Bismillah, A. N., Chapin, B. M., Hussein, B. A., & McGonigal, P. R. (2019). Shapeshifting molecules: the story so far and the shape of things to come. *Chemical Science, 11*(2), 324–332. https://doi.org/10.1039/c9sc05482k
Black Muslim Initiative & Diversity Institute. (2023). *Socio-economic review of the Black Muslim population in Canada.* https://www.torontomu.ca/content/dam/diversity/reports/Socio-Economic_Review_of_the_Black_Muslim_Population_in_Canada.pdf
BlackNorth Initiative. (n.d.). *About us.* https://blacknorthbegin.ca/about-us
Blair, N. (2024, November 4). *Biotechnology industry statistics in Canada*. Made in CA. https://madeinca.ca/biotechnology-industry-statistics-canada/
Blanchette, S. (2025, January 6). *Businesses must stop caving to political pressure and abandoning their EDI commitments*. Talent Canada. https://www.talentcanada.ca/businesses-must-stop-caving-to-political-pressure-and-abandoning-their-edi-commitments/
Bliemel, M. J., & Maine, E. M. A. (2008, October). Network embeddedness as a predictor of performance for new technology-based firms. *International Journal of Technoentrepreneurship, 1*(3), 313–341. https://doi.org/10.1504/ijte.2008.020542
Bollinger, M., & McSkimming, B. M. (2024). Of microscopes and meeting places: A literature review examining barriers to Indigenous participation in STEM. *Education Sciences, 14*(2), 145–145. https://doi.org/10.3390/educsci14020145
Bøllingtoft, A., & Ulhøi, J. P. (2005, March). The networked business incubator—leveraging entrepreneurial agency?. *Journal of Business Venturing, 20*(2), 265-290. https://doi.org/10.1016/j.jbusvent.2003.12.005
Borgonovi, F. et al. (2023). Emerging trends in AI skill demand across 14 OECD countries. *OECD Artificial Intelligence Papers*, 2. OECD Publishing, Paris. https://doi.org/10.1787/7c691b9a-en.
Botella, C., Rueda, S., López-Iñesta, E., & Marzal, P. (2019). Gender diversity in STEM disciplines: A multiple factor problem. *Entropy, 21*(1), 30. https://doi.org/10.3390/e21010030
Breznitz, D., & Zehavi, A. (2022). Promoting inclusive innovation for disabled people in four countries: who does what and why? *Disability & Society, 39*(4), 827–849. https://doi.org/10.1080/09687599.2022.2093698
Breznitz, S. M., & Zhang, Q. (2019). Fostering the growth of student start-ups from university accelerators: An entrepreneurial ecosystem perspective. *Industrial and Corporate Change, 28*(4), 855-873. https://doi.org/10.1093/icc/dtz033

Brush, C. G., & Cooper, S. Y. (2012). Female entrepreneurship and economic development: An international perspective. *Entrepreneurship and Regional Development, 24*(1-2), 1–6. https://doi.org/10.1080/08985626.2012.637340
Budisa, N., & Wieden, H. (n.d.). *Prairie hub to power the bioeconomy with next-generation bio-inspired technologies. Innovating Canada.* https://www.innovatingcanada.ca/technology/prairie-hub-to-power-the-bioeconomy-with-next-generation-bio-inspired-technologies/
Business at OECD. (2024). *Transforming science, technology and innovation policy for transitions.* OECD. https://www.businessatoecd.org/hubfs/2024-04%20Transforming%20Science,%20Technology%20and%20Innovation%20Policy%20for%20Transitions.pdf
Business Wire. (2024, September 24). *BioTalent Canada announces first recipients of the I.D.E.A.L. scholarship*. https://www.businesswire.com/news/home/20240924674100/en/BioTalent-Canada-Announces-First-Recipients-of-the-I.D.E.A.L.-Scholarship%E2%84%A2
Cachat-Rosset, G., & Klarsfeld, A. (2023). Diversity, equity, and inclusion in artificial intelligence: An evaluation of guidelines. Applied Artificial Intelligence, 37(1). https://doi.org/10.1080/08839514.2023.2176618
Cameron, A. I., & Tedds, L. M. (2023). Canada's GBA framework in a (post) pandemic world: Issues, tensions and paths forward. *Canadian Public Administration, 66*(1), 7-27.
Canada Foundation for Innovation. (2021). *Equity, diversity and inclusion (EDI) in Canada's research ecosystem: A report on the CFI's EDI institutional capacity-building initiatives.* https://www.innovation.ca/sites/default/files/2021-09/CFI-EDI-Report-2021.pdf
Canada Research Chairs. (n.d.). *About us.* Government of Canada. https://www.chairs-chaires.gc.ca/about_us-a_notre_sujet/index-eng.aspx
Canada Research Chairs. (n.d.). *Establishing equity targets for 2021 to 2029*. Government of Canada. https://www.chairs-chaires.gc.ca/program-programme/equity-equite/targets-cibles-eng.aspx
Canada Research Chairs. (n.d.). *Program representation statistics.* https://www.chairs-chaires.gc.ca/about_us-a_notre_sujet/statistics-statistiques-eng.aspx
Canada Research Coordinating Committee. (2024, October 10). *Best practices in equity, diversity and inclusion in research practice and design.* Government of Canada. https://www.sshrc-crsh.gc.ca/funding-financement/nfrf-fnfr/edi-eng.aspx
Canada's 2SLGBTQI+ Chamber of Commerce. (n.d.). *2SLGBTQI+ Entrepreneurship Program. Canada's 2SLGBTQI+ Chamber of Commerce*. https://cglcc.ca/programs/2slgbtqi-entrepreneurship-program/
Canadian Association of University Business Officers. (2024). *Financial information of universities and colleges (FIUC) 2022-2023*. https://www.caubo.ca/wp-content/uploads/2024/09/2022-2023-CAUBO-data-Public-English-Sep-2024.xlsx
Canadian Association of University Teachers. (2018). *Under-represented & underpaid: Diversity & equity among Canada's post-secondary education teachers.* https://www.caut.ca/sites/default/files/caut_equity_report_2018-04final.pdf
Canadian Centre for Diversity and Inclusion. (2016). *Supplier diversity in Canada.* https://ccdi.ca/media/1066/ccdi-report-supplier-diversity-in-canada-updated-4072016.pdf
Canadian Committee on Women in Engineering. (1992a). *Table 6: Seventeen-year summary of fall undergraduate enrollment of women, including foreign students, in accredited engineering programs as a proportion of the total 1974 - 1990*. https://www3.carleton.ca/cwse-on/webmtjnen/table6.html
Canadian Committee on Women in Engineering. (1992b). *Average annual base salary of female and male professional engineers and engineers-in-training by year of graduation, 1980-1989.* https://www3.carleton.ca/cwse-on/webmtjnen/table22.html
Canadian Council for Indigenous Business. (2021). *Understanding intellectual property awareness & use by Indigenous businesses: 2019 Intellectual property survey of Indigenous businesses.* https://www.ccab.com/wp-content/uploads/2021/07/CCAB__english_FINAL_DIGITAL-ERG.pdf
Canadian Council of Academies. (2023). *Equity, diversity, and inclusion practices in the post-secondary research system: Expert panel on equity, diversity, and inclusion practices for the post-secondary research system.* https://cca-reports.ca/reports/equity-diversity-and-inclusion-practices-in-the-post-secondary-research-system/
Canadian Council of Academies. (2020, November 28). *Some assembly Required: STEM Skills and Canada's economic productivity*. https://cca-reports.ca/reports/some-assembly-required-stem-skills-and-canadas-economic-productivity/
Canadian Human Rights Act, RSC 1985, c H-6.
Canadian Human Rights Commission. (2024, May). *Workplace accommodation - A guide for federally regulated employers.* https://www.chrc-ccdp.gc.ca/en/resources/publications/workplace-accommodation-guide
Canadian Intellectual Property Office. (2024). Patenting by women-owned businesses in Canada. https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en/ip-canada-report-2023-message-ceo/ip-canada-report-2023-patenting-women-owned-businesses-canada
Canadian Institutes of Health Research, Institute of Gender and Health. (n.d.). *Online training modules: Integrating sex & gender in health research.* Government of Canada. https://cihr-irsc.gc.ca/e/49347.html
Canadian Institutes of Health Research, Institute of Gender and Health. (2018). *Science is better with sex and gender: Strategic plan 2018–2023.* Government of Canada. https://cihr-irsc.gc.ca/e/documents/igh_strategic_plan_2018-2023-e.pdf
Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council of Canada. (2018). *Tri-Council policy statement: Ethical conduct for research involving humans TCPS2 2018*. https://ethics.gc.ca/eng/documents/tcps2-2018-en-interactive-final.pdf

Canadian Nuclear Isotope Council. (2024, March 18). *Isotopes for hope podcast - Episode 2: Kathryn Hayashi, TRIUMF innovations.* YouTube. https://www.youtube.com/watch?v=gUFw-g2MJ8

Canadian Science Policy Centre. (2024). *Strategic plan: Imagining Canada's future: Connecting science, innovation, and policy for greater prosperity.* https://sciencepolicy.ca/wp-content/uploads/2024/11/CSPC_Strategic_Plan_EN_Final_2024-11-19.pdf

CanadianSME Small Business Podcast. (2023, December 7). *Insights into WEOC's impact with Alison Kirkland and Marcede Sebelius* [Audio podcast episode]. https://smbpodcast.ca/insights-into-weocs-impact-with-alison-kirkland-and-marcede-sebelius/

Carter, D.F., Razo Dueñas, J.E., Mendoza, R. (2019). Critical examination of the role of STEM in propagating and maintaining race and gender disparities. In Paulsen, M.B., Perna, L.W. (eds) *Higher Education: Handbook of Theory and Research.* Higher Education: Handbook of Theory and Research, vol 34. Springer, Cham. https://doi.org/10.1007/978-3-030-03457-3_2

Casad, B. J., Franks, J. E., Garasky, C. E., Kittleman, M. M., Roesler, A. C., Hall, D. Y., & Petzel, Z. W. (2021). Gender inequality in academia: Problems and solutions for women faculty in STEM. *Journal of neuroscience research, 99*(1), 13-23. https://doi.org/10.1002/jnr.24631

Cavallo, A., Ghezzi, A., & Balocco, R. (2019). Entrepreneurial ecosystem research: Present debates and future directions. *International Entrepreneurship and Management Journal, 15*, 1291-1321. https://doi.org/10.1007/s11365-018-0526-3

Chan, P. C. W., Handler, T., & Frenette, M. (2021). *Gender differences in STEM enrolment and graduation: What are the roles of academic performance and preparation?* Statistics Canada. https://publications.gc.ca/collections/collection_2021/statcan/36-28-0001/CS36-28-0001-2021-11-4-eng.pdf

Charlton, J. I. (1998). *Nothing about us without us: Disability oppression and empowerment.* University of California Press. https://www.ucpress.edu/books/nothing-about-us-without-us/paper

Chatti, R., Drabo, M., & Gagnon, D. (2024). *Innovation ecosystem performance indicators: Review of the literature*. Statistics Canada. https://www150.statcan.gc.ca/n1/en/pub/11-633-x/11-633-x2024003-eng.pdf

Chaudhry, I. S., Paquibut, R. Y., Tunio, M. N., & Wright, L. T. (2021). Do workforce diversity, inclusion practices, & organizational characteristics contribute to organizational innovation? Evidence from the U.A.E. *Cogent Business & Management, 8*(1). https://doi.org/10.1080/23311975.2021.1947549

Chavatzia, T. (2017). *Cracking the code: Girls' and women's education in science, technology, engineering and mathematics (STEM).* UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000253479

Chen, C. Y., Kahanamoku, S. S., Tripati, A., Alegado, R. A., Morris, V. R., Andrade, K., & Hosbey, J. (2022). Systemic racial disparities in funding rates at the National Science Foundation. *eLife, 11*, Article e83071. https://doi.org/10.7554/eLife.83071

Chen, D., & Dahlman, C.J. (2010). *The knowledge economy, the KAM methodology and World Bank operations*. World Bank Group. http://documents.worldbank.org/curated/en/695211468153873436/The-knowledge-economy-the-KAM-methodology-and-World-Bank-operations

Hansen, M. T., Chesbrough, H. W., Nohria, N., & Sull, D. N. (2000). Networked incubators. Hothouses of the new economy. In *Harvard business review* 78(5), 74–199.

Chigbu, B. I., & Nekhwevha, F. (2023). Exploring the concepts of decent work through the lens of SDG 8: addressing challenges and inadequacies. *Frontiers in Sociology*, *8*, 1266141–1266141. https://doi.org/10.3389/fsoc.2023.1266141

Ciborra, C. U., & Andreu, R. (2001). *Sharing Knowledge across Boundaries. Journal of Information Technology, 16*(2), 73–81. https://doi.org/10.1080/02683960110055103

Canadian Intellectual Property Office. (2023). *IP Canada Report 2023: Patenting by women-owned businesses in Canada.* https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en/ip-canada-report-2023-message-ceo/ip-canada-report-2023-patenting-women-owned-businesses-canada

Conference Board of Canada. (2024). *2024 Innovation Report Card: Benchmarking Canada's Innovation Performance.* https://www.conferenceboard.ca/product/innovation-report-card_2024/

Continual Engine Team. (2024, April 5). *Inclusive vs. universal design: Why it matters.* Continual Engine. https://www.continualengine.com/blog/inclusive-vs-universal-design/

Cooke P. (2007). Regional innovation, entrepreneurship and talent systems. International Journal of Entrepreneurship and Innovation Management, 7(2–5), 117–139. https://doi.org/10.1504/IJEIM.2007.012878

Cooper, L. (2013). *Canadian women grabbing the baton.* RBC Economics. https://www.rbc.com/newsroom/pdf/women-and-sme-10-2013.pdf

Council of Canadian Academies. (2018). *Competing in a Global Innovation Economy: The Current State of R&D in Canada.* https://www.cca-reports.ca/wp-content/uploads/2018/09/Competing_in_a_Global_Innovation_Economy_FullReport_EN.pdf

Council of Canadian Academies. (2023). *Northern Research Leadership and Equity.* https://www.cca-reports.ca/wp-content/uploads/2023/12/Arctic-EN_final-digital.pdf

Council of Canadian Academies. (2024). *Equity, Diversity and Inclusion in the Post-Secondary Research System.* https://www.cca-reports.ca/wp-content/uploads/2024/10/EDI_EN_FINAL.pdf

Cricelli, L., Grimaldi, M., & Vermicelli, S. (2022). *Crowdsourcing and open innovation: A systematic literature review, an integrated framework and a research agenda.* Review of Managerial Science, 16(5), 1269–1310. https://doi.org/10.1007/s11846-021-00482-9

Cukier, W., Broughton, S., Noshiravani, R., Perruzza, S., & Weissling, L. (2024a). *More than just numbers: Progress on women in engineering since 1992*. Diversity Institute.
Cukier, W., Elmi, M., Mo, G.Y., Osten, V., & Singh, S. (2023, December). *Diversity in leadership at S&P/TSX Companies.* Diversity Institute; Future Skills Center; 30% Club. https://www.torontomu.ca/diversity/reports/diversity-in-leadership-at-s-and-p-tsx-companies/
Cukier, W., & Middleton, C. (2012). *Assessing the Impact of Universities in the Innovation Ecosystem.* https://www.torontomu.ca/content/dam/diversity/reports/KSG2012_NewCover_FullReport.pdf
Cukier, W., Gagnon, S., Dalziel, M., Grant, K., Laplume, A., Ozkazanc-Pan, B., & Saba, T. (2022a). Women entrepreneurship: towards an inclusive innovation ecosystem. *Journal of Small Business & Entrepreneurship, 34*(5), 475–482. https://doi.org/10.1080/08276331.2022.2066436
Cukier, W., Mo, G. Y., & Francis, J. A. (2022b). Women's entrepreneurship in the inclusive innovation ecosystem in Canada. In *Gender, Diversity and Innovation* (pp. 223-238). Edward Elgar Publishing.
Cukier, W., Saunders, V., Love, M., Cassinelli, C., Jae, K., & Zou, C. (2024b). *Greening small and medium-sized enterprises: Women entrepreneurs and the path to Net Zero.* Diversity Institute; Future Skills Centre; Coralus. https://www.torontomu.ca/content/dam/diversity/reports/DI-FS-Greening-SMEsMarch2024_final.pdf
Cukier, W., Saunders, V., Stewart, S., & Wright, E. (2022c). Social entrepreneurship and addressing SDGs through women's empowerment: A case study of She-EO. In *World scientific encyclopedia of business sustainability, Ethics and entrepreneurship* (pp. 83-111). https://doi.org/10.1142/9789811248870_0005
Dabić, M., Vlačić, B., Paul, J., Dana, L.-P., Sahasranamam, S., & Glinka, B. (2020). Immigrant entrepreneurship: A review and research agenda. *Journal of Business Research, 113*, 25–38. https://doi.org/10.1016/j.jbusres.2020.03.013
Dahabieh, M. S., Bröring, S., & Maine, E. (2018). Overcoming barriers to innovation in food and agricultural biotechnology. *Trends in Food Science & Technology, 79*, 204–213. https://doi.org/10.1016/j.tifs.2018.07.004
Daly, J. (2023). *Building trust with Indigenous businesses*. Export Development Canada. https://www.edc.ca/en/article/building-relationships-with-indigenous-businesses.html
Davenport, P. (September 3, 2024). *Diversity in Tech: How well does Canada support female and minority entrepreneurs?.* Boast. https://boast.ai/blog/diversity-in-tech-how-well-does-canada-support-female-and-minority-entrepreneurs/
Davidson, A., & Hume, V. (2020). *Accelerating women-led startups: A knowledge brief by the Global Accelerator Learning Initiative.* Aspen Network of Development Entrepreneurs. https://www.galidata.org/assets/report/pdf/accelarating_women_led_startups_final.pdf
Davies, S. W., Putnam, H. M., Ainsworth, T., Baum, J. K., Bove, C. B., Crosby, S. C., Côté, I. M., Duplouy, A., Fulweiler, R. W., Griffin, A. J., Hanley, T. C., Hill, T., Humanes, A., Mangubhai, S., Metaxas, A., Parker, L. M., Rivera, H. E., Silbiger, N. J., Smith, N. S., . . . Bates, A. E. (2021). Promoting inclusive metrics of success and impact to dismantle a discriminatory reward system in science. *PLoS Biology, 19*(6), e3001282. https://doi.org/10.1371/journal.pbio.3001282
DeCoito, I. (2016). STEM education in Canada: A Knowledge Synthesis. *Canadian Journal of Science, Mathematics and Technology Education, 16*(2), 114-128. https://doi.org/10.1080/14926156.2016.1166297
Dessanti, C. (2020). *The She-Covery Project: Confronting the Gendered Economic Impacts of COVID-19 in Ontario.* Ontario Chamber of Commerce. https://occ.ca/wp-content/uploads/OCC-shecovery-final.pdf
Dickel, P., & Eckardt, G. (2021). Who wants to be a social entrepreneur? The role of gender and sustainability orientation. *Journal of Small Business Management*, *59*(1), 196–218. https://doi.org/10.1080/00472778.2019.1704489
Digital NS Promoting Women in Tech. (2024). Entrevestor. https://entrevestor.com/home/entry/digital-ns-promoting-women-in-tech
Direito, I., Chance, S., Clemmensen, L., Craps, S., Economides, S. B., Isaac, S. S., A. M., Truscott, F. R. & Wint, N. (2021, December). Diversity, equity, and inclusion in engineering education: An exploration of European higher education institutions' strategic frameworks, resources, and initiatives. *In SEFI 49th annual conference proceedings 2021* (pp. 189-193). SEFI-European Society for Engineering Education; Brussels.
Diversio. (n.d.). Inclusive leadership: What it is and why it matters. https://diversio.com/inclusive-leadership-why-it-matters/
Diversity Institute. (2023). *Women at the table: Exploring women's participation in ISO Standards Development*. Internal report: unpublished.
Diversity Institute. (2023). *Inclusive innovation: Employment barriers for equity-deserving groups in STEM and entrepreneurship*. https://www.torontomu.ca/diversity/research/future-skills/orf_re/orf-re_inclusive_innovation-employment_barriers_for_equity_deserving_groups/
Diversity Institute (2024). *WES program evaluation*. Unpublished work-in-progress report.
Diversity Institute, & NGEN. (2024). *Equity, diversity and inclusion content for future ready*. https://www.ngen.ca/hubfs/NGEN-Best-Practices-Report-2024.02.05-Draft.pdf
DMZ. (n.d.). *About DMZ*. Toronto Metropolitan University. https://dmz.torontomu.ca/about
DMZ (n.d.). *Black Innovation Programs*. Toronto Metropolitan University. https://dmz.torontomu.ca/bip/
DMZ (n.d.). *Women Innovation Programs*. Toronto Metropolitan University. https://dmz.torontomu.ca/womeninnovationprograms/
Duchek, S., Raetze, S. & Scheuch, I. The role of diversity in organizational resilience: A theoretical framework. *Bus Res 13*, 387–423 (2020). https://doi.org/10.1007/s40685-019-0084-8
Dunne, J. (2022, September 30). *Indigenous entrepreneurship: Making a business case for reconciliation*. CBC News. https://www.cbc.ca/news/business/indigenous-entrepreneurs-reconciliation-1.6601648

Earl, E. L., De Fuentes, C., Kinder, J., & Schillo, R. S. (2023). Inclusive innovation and how it can be measured in developed and developing countries. In *Handbook of innovation indicators and measurement* (pp. 297-322). Edward Elgar Publishing.
Earl, L., & Kinder, J. (2022). *Inclusive innovation: Government science and innovation in the new normal*. Institute on Governance. https://iog.ca/wp-content/uploads/2024/03/2022-11-05-GSINN_Inclusive-Innovation_discussion_paper.pdf
Ebrahimi, H. P., Schillo, R. S., & Bronson, K. (2021). Systematic stakeholder inclusion in digital agriculture: a framework and application to Canada. *Sustainability, 13*(12), 6879–6879. https://doi.org/10.3390/su13126879
EC-OECD (2025). *STIP Compass: Equity, diversity and inclusion (EDI) policy theme dashboard.* https://stip.oecd.org/stip/interactive-dashboards/themes/TH54
Eco Canada. (2023). *Diversity Within Canada's Green Workforce.* https://www.google.com/url?q=https://eco.ca/wp-content/uploads/2023/09/ECA_Diversity_Identities_JUN2023_EN_FINAL_REV.pdf&sa=D&source=docs&ust=1737386668452317&usg=AOvVaw0op9iHZj6_bZeW9YbVwUTH
EDC. (2023, July 1). Building trust with Indigenous businesses. https://www.edc.ca/en/article/building-relationships-with-indigenous-businesses.html
Edler, J., & Fagerberg, J. (2017). Innovation policy: What, why, and how. *Oxford Review of Economic Policy, 33*(1), 2–23. https://doi.org/10.1093/oxrep/grx001
Elevate. (n.d.). *Women+ Entrepreneur Incubator*. https://elevate.ca/women-entrepreneur-incubator/
Elias, H. (2020, January 16). Diversity is the bridge on which we can cross the skills gap. *World Economic Forum*. https://www.weforum.org/agenda/2020/01/diversity-tech-skills-gap-4ir-digital-revolution/
Ellingrud, K., Pérez, L., Petersen, A., & Sartori, V. (2024). *Closing the women's health gap: A $1 trillion opportunity to improve lives and economies*. McKinsey Health Institute. https://www.mckinsey.com/mhi/our-insights/closing-the-womens-health-gap-a-1-trillion-dollar-opportunity-to-improve-lives-and-economies
Ellis, M. (2024, February 21). Charting the path to inclusive innovation excellence. *Diversily*. https://www.diversily.com/inclusive-innovation-research/?utm
Embracing Equity. (n.d.). *Equity vs equality: where it differs (and how to embrace justice)*. https://www.embracingequity.org/post/equity-vs-equality-where-it-differs-and-how-to-embrace-justice
Employment Equity Act, SC 1995, c 44.
Employment and Social Development Canada & Immigration, Refugees and Citizenship Canada. (2018). *Eliminating barriers to foreign qualification recognition: Emerging and best practices conference.* Government of Canada.
Employment and Social Development Canada (ESDC). (2023). *Employment Equity Act annual report 2023*. Government of Canada https://www.canada.ca/en/employment-social-development/corporate/portfolio/labour/programs/employment-equity/reports/2023-annual.html
Employment Equity Act Review Task Force. (2023). *Executive summary: A transformative framework to achieve and sustain employment equity*. Government of Canada. https://www.canada.ca/en/employment-social-development/corporate/portfolio/labour/programs/employment-equity/reports/act-review-task-force-summary.html
Engineers Canada. (2023b). *Canadian engineers for tomorrow: Trends in engineering enrolment and degrees awarded 2017-2022.*https://engineerscanada.ca/reports/enrolment-and-degrees-awarded-report/2022-canadian-engineers-for-tomorrow#appendix-anbsp
Engineers Canada. (2023a). *National membership information.* https://engineerscanada.ca/reports/national-membership-report/2023-national-membership-information#-sex-representation-in-engineering
Engineers Canada. (2024). *Environmental scan report: 30 by 30 and beyond.* https://engineerscanada.ca/sites/default/files/diversity/SP3-Environmental-Scan.pdf
Ensign, P. C., & Robinson, N. P. (2011). Entrepreneurs because they are immigrants or immigrants because they are entrepreneurs? A critical examination of the relationship between the newcomers and the establishment. *The Journal of Entrepreneurship, 20(1), 33-53*. https://doi.org/10.1177/097135571002000102
Eshkenazi, A. (2024). 5 Ways to Transform Your Supply Chain with Inclusion, Equity and Diversity. *ASCM Insights*. https://www.ascm.org/ascm-insights/scm-now-impact/5-ways-to-transform-your-supply-chain-with-inclusion-equity-and-diversity/
European Commission: Directorate-General for Research and Innovation. (2023). *Horizon Europe strategic plan 2025-2027 analysis*. Publications Office of the European Union. https://data.europa.eu/doi/10.2777/637816
European Institute of Innovation & Technology. (2021). *Innovation Model*. https://eit.europa.eu/sites/default/files/eit_innovation_model.pdf
European Union. (2015). *Final evaluation of the impact of the Enterprise Europe Network 2008-2014*. https://op.europa.eu/en/publication-detail/-/publication/d4cf03ed-972c-11e5-983e-01aa75ed71a1
Eurostat. (2018). *Community innovation survey*. https://ec.europa.eu/eurostat/web/microdata/community-innovation-survey
Faden, R. R., & Beauchamp, T. L. (1986). *A history and theory of informed consent*. Oxford University Press.
Favaretto, M., De Clercq, E., Gaab, J., & Elger, B. S. (2020). First do no harm: An exploration of researchers' ethics of conduct in Big Data behavioral studies. *PLoS ONE, 15*(11), e0241865. https://doi.org/10.1371/journal.pone.0241865
Federation of African Canadian Economics (FACE). (2024). *FACE Coalition Annual Report 2023-2024*. https://issuu.com/facecoalition/docs/eng_face_annual_report_2023-2024_1
Feldman, R., Armitage, A., & Wang, C. (2016). The gender gap in startup catalyst organizations: Bridging the divide between narrative and reality. *Oregon Law Review, 95*(2), 313. http://hdl.handle.net/1794/22323

Femtech Analytics (n.d.). *FemTech Market Overview.* https://www.femtech.health/femtech-market-overview?t
Financial Post. (2017, March 1). Empowering women in venture capital firms correspondingly empowers entrepreneurial women. https://financialpost.com/executive/e-suite-women/empowering-women-in-venture-capital-firms-correspondingly-empowers-entrepreneurial-women
Fines-Neuschild, M., & Tajmel, T. (2024). " It's kind of my responsibility": An analysis of the current EDI discourse in Canadian STEM fields and its potential and limitations to contest intersectional discrimination. Canadian Journal of Higher Education, 54(1), 27-41. https://doi.org/10.47678/cjhe.vi.190047
Fortune Business Insights (2024, Dec. 4). *Femtech Market Size, Share & Industry Analysis, By Type (Products, and Mobile Applications), By Application (Menstruation Care & Fertility Tracking, Pregnancy & Nursing Care, Menopausal Health, and General Health & Wellness), and Regional Forecast, 2024-2032*
https://www.fortunebusinessinsights.com/femtech-market-107413
Forrester, J., & Neville, F. (2021). *An institutional perspective on borrowing discouragement among female-owned enterprises and the role of regional female empowerment.* Journal of Business Venturing, *36*(6), 106156.
Fosch-Villaronga, E., Drukarch, H. (2023). Accounting for Diversity in Robot Design, Testbeds, and Safety Standardization. *Int J of Soc Robotics, 15*, 1871–1889. https://doi-org.ezproxy.lib.torontomu.ca/10.1007/s12369-023-00974-6
4 Front Information Services. (2024, March 26). *Equity, Diversity, and Inclusion (EDI), Going Beyond New Regulatory Compliance*. https://www.4front.co.uk/equity-diversity-and-inclusion-edi-going-beyond-new-regulatory-compliance/
Franke, N. (2013). User-driven innovation. In *Oxford University Press eBooks*. https://doi.org/10.1093/oxfordhb/9780199694945.013.036
Franklin, U. (1989) *The real world of technology.* Toronto, Anasi. https://houseofanansi.com/products/the-real-world-of-technology?srsltid=AfmBOopx6patSxGEcOfAMekr0FeyGOCh0o81duLiR7kkgNJuxMI34Fp_
Freeman, C. (1982). *The Economics of Industrial Innovation*. Frances Pinter Publishers Ltd., London, UK.
Freeman, J. B. (2020). Measuring and resolving LGBTQ disparities in STEM. Policy Insights from the Behavioral and Brain Sciences, 7(2), 141-148. https://doi.org/10.1177/2372732220943232
Future Skills Centre. (2024). *Driving innovation through inclusion: Accelerate leadership*. https://fsc-ccf.ca/projects/driving-innovation-through-inclusion-accelerate-leadership/
Futurpreneur Canada. (2024). *About us*. Futurpreneur Canada. https://futurpreneur.ca/en/about-us/
Futurpreneur. (n.d.). *Explore our programs*. Futurpreneur. https://futurpreneur.ca/en/explore-our-programs/
Galdas, P. (2017). Revisiting Bias in Qualitative Research: Reflections on Its Relationship With Funding and Impact. *International Journal of Qualitative Methods, 16*(1). https://doi.org/10.1177/1609406917748992
GEM. (2024). *GEM 2023/2024 Global Report, 25 Years and Growin*g. https://www.gemconsortium.org/reports/latest-global-report
George, G., McGahan, A. M., & Prabhu, J. (2012). Innovation for inclusive growth: Towards a theoretical framework and a research agenda. *Journal of management studies, 49*(4), 661-683. https://doi.org/10.1111/j.1467-6486.2012.01048.x
Ghiasi, G., Larivière, V., & Sugimoto, C. R. (2015). On the Compliance of Women Engineers with a Gendered Scientific System. *PloS one, 10*(12), e0145931. https://doi.org/10.1371/journal.pone.0145931
Giraldez, J. & Indigenous Services Canada. (2022). *Why Indigenous economic development matters* [Report]. https://www.trade.gov/sites/default/files/2022-11/Indigenous%20Services%20Presentation.pdf
Global Entrepreneurship Monitor (GEM). (2021). *The world foremost study of entrepreneurship since 1999*. https://www.gemconsortium.org/
Global University Systems Canada. (2023, August 15). *Breaking Barriers: Women in STEM.* https://guscanada.com/breaking-barriers-women-in-stem/
Gonzales, L. D., Hall, K., Benton, A., Kanhai, D., & Anne-Marie Núñez. (2021). Comfort over change: A case study of diversity and inclusivity efforts in U.S. Higher Education. *Innovative Higher Education, 46*(4), 445–460. https://doi.org/10.1007/s10755-020-09541-7
Government of Canada. (n.d.). *Strengthening equity, diversity and inclusion in research*. https://www.canada.ca/en/research-coordinating-committee/priorities/equity-diversity-inclusion-research.html
Government of Canada. (1995). *Employment Equity Act, S.C. 1995, c. 44*. https://laws-lois.justice.gc.ca/eng/acts/e-5.401/page-1.html#h-215132
Government of Canada. (2017). *Evaluation of Commercialization of Research: Centre of Excellence for Commercialization and Research*. https://www.nserc-crsng.gc.ca/_doc/EvaluationCECR_e.pdf
Government of Canada. (2020). *2019 BAI performance measurement framework: 2.0. Canada.ca*. https://ised-isde.canada.ca/site/sme-research-statistics/en/business-accelerators-and-incubators/bai-performance-measurement-framework/2019-bai-performance-measurement-framework-20#Toc4579862
Government of Canada. (2021a, April 19). *A Recovery Plan for Jobs, Growth and Resilience*. https://www.budget.canada.ca/2021/home-accueil-en.html
Government of Canada. (2021b, April 29). *Financial Performance Data*. https://ised-isde.canada.ca/site/financial-performance-data/en
Government of Canada. (2022, June 7). *Business accelerator and incubator performance measurement survey*. https://ised-isde.canada.ca/site/sme-research-statistics/en/business-accelerators-and-incubators/bai-performance-measurement-framework/business-accelerator-and-incubator-performance-measurement-survey

Government of Canada. (2022, June. 7). *Immigration matters in business.* https://www.canada.ca/en/immigration-refugees-citizenship/campaigns/immigration-matters/growing-canada-future/business.html
Government of Canada. (2024, July 30). *Performance Metrics for VCCI 2017 – December 31, 2022*. Canada.ca. https://ised-isde.canada.ca/site/sme-research-statistics/en/venture-capital-catalyst-initiative/performance-metrics-vcci-2017-december-31-2022
Government of Canada. (2024a, October 10). *Best practices in equity, diversity and inclusion in research practice and design*. https://www.sshrc-crsh.gc.ca/funding-financement/nfrf-fnfr/edi-eng.aspx
Government of Canada. (2024b). *Taking action together: Canada's 2024 annual report on the 2030 agenda and the sustainable development goals*. https://www.canada.ca/content/dam/esdc-edsc/images/programs/agenda-2030/4483-SDG-Annual-Report-2024-E.pdf
Government of Canada, Innovation, Science and Economic Development Canada, Minister of Small Business and Tourism & Minister of Small Business and Tourism. (2024c, December 23). *The Strategic Innovation Fund*. https://ised-isde.canada.ca/site/strategic-innovation-fund/en
Government of Canada, Office of the Auditor General of Canada. (n.d.). *Report 4—Strategic Innovation*
Grand View Research. (n.d.). *Canada femtech market, 2018-2030 (US$M)*. https://www.grandviewresearch.com/horizon/regional_image/canada-femtech-market-800830.webp?sa=X&ved=2ahUKEwjyvbW-27GKAxU6QTABHesKKEkQ_B16BAgDEAI&t
Granstrand, O., & Holgersson, M. (2020). Innovation ecosystems: A conceptual review and a new definition. *Technovation*, *90*, 102098. https://doi.org/10.1016/j.technovation.2019.102098
Greene, P. G., & Butler, J. S. (1996). The minority community as a natural business incubator. *Journal of Business research, 36*(1), 51-58. https://doi.org/10.1016/0148-2963(95)00162-X
Gregson, G., & Saunders, C. (2022). *GEM Canada 2021 national report*. https://www.gemconsortium.org/report/gem-canada-2021-report
Griffin, D., Li, K., & Xu, T. (2021). Board gender diversity and corporate innovation: International evidence. *Journal of Financial and Quantitative Analysis, 56*(1),123-154. doi:10.1017/S002210901900098X
Gueye, B. (2024). *Women in the environmental and clean technology sector. Economic and Social Reports, 4*(7). https://www.google.com/url?q=https://www150.statcan.gc.ca/n1/pub/36-28-0001/2024007/article/00003-eng.htm&sa=D&source=docs&ust=1737386668452359&usg=AOvVaw24LyQ3HQIoysr4BPwaE5ZP
Gunderson, M., & Cukier, W. (2023). *Too big to fail vs. too small to see: Rectifying the bias against spillover multiplier effects of SMEs and women entrepreneurship*. http://dx.doi.org/10.2139/ssrn.4664053
Gustavo, C., Alessandro, M., Mohnen, P., & Gonzalo, V. (2011). Evaluating the Impact of Science, Technology and Innovation Programs: a Methodological Toolkit. *IDB*. http://dx.doi.org/10.18235/0008984
Hackett, S. M., & Dilts, D. M. (2004). A systematic review of business incubation research. *The Journal of Technology Transfer, 29*(1), 55-82. https://doi.org/10.1023/B:JOTT.0000011181.11952.0f
Hallen, B. L., Cohen, S. L., & Bingham, C. B. (2020). Do accelerators work? If so, how?. *Organization Science, 31*(2), 378-414. https://dx.doi.org/10.2139/ssrn.2719810
Handelsman, J., Elgin, S., Estrada, M., Hays, S., Johnson, T., Miller, S., Mingo, V., Shaffer, C., & Williams, J. (2022). Achieving STEM diversity: Fix the classrooms. *Science, 376*(6597), 1057–1059. https://doi.org/10.1126/science.abn9515
Hango, D. (2013, December). *Gender differences in science, technology, engineering, mathematics and computer science (STEM) programs at university*. Statistics Canada. https://www150.statcan.gc.ca/n1/en/pub/75-006-x/2013001/article/11874-eng.pdf?st=zSnH9bVj
Hayashi, K. (2019, June 12). Collaboration, investment and innovation for Canadian global leadership in nuclear medicine. *TheFutureEconomy.ca*. https://thefutureeconomy.ca/interviews/kathryn-hayashi/
Hayter, C. S. (2016). A trajectory of early-stage spinoff success: the role of knowledge intermediaries within an entrepreneurial university ecosystem. *Small Business Economics, 47*, 633-656. https://doi.org/10.1007/s11187-016-9756-3
Hechavarría, D. M., Terjesen, S. A., Ingram, A. E. et al. (2017). Taking care of business: The impact of culture and gender on entrepreneurs' blended value creation goals. *Small Business Economics, 48*, 225–257. https://doi. org/10.1007/s11187-016-9747-4
Henry, C., Coleman, S., Orser, B., & Foss, L. (2022). Women's entrepreneurship policy and access to financial capital in different countries: an Institutional perspective. *Entrepreneurship Research Journal, 12*(3), 227–262. https://doi.org/10.1515/erj-2022-0234
Hepburn, J. (2021). Inclusive Innovation Key to Unlocking Potential of Canada's Innovation Ecosystem. *Canadian Science Policy Centre.* https://sciencepolicy.ca/posts/inclusive-innovation-key-to-unlocking-full-potential-of-canadas-innovation-ecosystem-2/
Hill, A. (2022, September 20). Diversity and inclusion in innovation: understanding the 'gap' and five ways to empower innovators. *Clarivate*. https://clarivate.com/intellectual-property/blog/diversity-and-inclusion-in-innovation-understanding-the-gap-and-five-ways-to-empower-innovators/
Hofstra, B., Kulkarni, V. V., Galvez, S. M., He, B., Jurafsky, D., & McFarland, D. A. (2019). The Diversity-Innovation Paradox in Science. *PNAS*. https://doi.org/10.1073/pnas.1915378117
Hollinrake, K., & Badenoch, K. (2023, June 7). Investing in Women Code closing the finance gap. Gov.UK. https://www.gov.uk/government/news/investing-in-women-code-closing-the-finance-gap

Horton, J. (2002). Principles of biomedical ethics. *Transactions of the Royal Society of Tropical Medicine and Hygiene, 96*(1), 107. https://doi.org/10.1016/s0035-9203(02)90265-8https://www.researchgate.net/publication/12869379_Principles_of_biomedical_ethics
Hou, F. (2019). *Study: Immigrant skill utilization: Immigrants with STEM education and trends in over-education.* Statistics Canada. https://www150.statcan.gc.ca/n1/daily-quotidien/191213/dq191213d-eng.htm
Huang, L., & Rivard, P. (2021). *Financing of women-owned small and medium-sized enterprises in Canada.* Ottawa: Innovation, Science and Economic Development Canada.
Huang, L., Joshi, P., Wakslak, C., & Wu, A. (2021). Sizing up entrepreneurial potential: Gender differences in communication and investor perceptions of long-term growth and scalability. *Academy of Management Journal, 64*(3), 716-740. https://doi.org/10.5465/amj.2018.1417
Hunt, V., Prince, S., Dixon-Fyle, S., & Dolan, K. (2020). *Diversity wins: How inclusion matters*. McKinsey & Company. https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Diversity%20and%20Inclusion/Diversity%20wins%20How%20inclusion%20matters/Diversity-wins-How-inclusion-matters-vF.pdf
IEC & ISO. (2022). *Gender Responsive Standards: Guidance for ISO and IEC technical Committees*. https://www.iso.org/files/live/sites/isoorg/files/standards/docs/en/Guidance%20on%20Gender%20Responsive%20Standards.pdf
Immigration, Refugees and Citizenship Canada. (2024). *Immigration matters in science and technology.* Government of Canada. https://www.canada.ca/en/immigration-refugees-citizenship/campaigns/immigration-matters/growing-canada-future/science-technology.html
Impact Assessment Agency of Canada. (2024). *Gender-based Analysis Plus in Impact Assessment.* https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/gender-based-analysis.html
Impact Assessment Agency of Canada. (2024). *Gender-based Analysis Plus in Impact Assessment* [Presentation]. https://iaac-aeic.gc.ca/050/documents/p83514/152517E.pdf
Inclusive Design and Innovation Alliance. (2024). *The Equity Principles and Metrics Framework for Power-Sharing and Locally-Led Development.* https://static1.squarespace.com/static/6295f2360cd56b026c257790/t/66048575659313249a47c46f/1711572346746/IDIA+-+E%26I+Report.pdf
Indigenous Services Canada. (2023, March). Closing the infrastructure gap by 2030. https://afn.bynder.com/m/367574a3a5cb5abe/original/1-AFN-Closing-the-Infrastructure-Gap-by-2030-National-Cost-Estimate-English-report-1.pdf
Indigenous Services Canada. (2023). *Evaluation of the Indigenous Entrepreneurship and Business Development Program.* Government of Canada.
Industry Canada. (2015). *Determinants of Entrepreneurship in Canada: State of Knowledge*. https://ised-isde.canada.ca/site/sme-research-statistics/sites/default/files/attachments/2022/DEC_2015-06_eng.pdf
Information and Communications Technology Council. (2022). *Women in Canada's digital economy: Transforming the future of work*. https://ictc-ctic.ca/sites/default/files/ictc-admin/resources/admin/ict001genderreportdesignfnl-2.pdf
Information and Communications Technology Council. (n.d.). *ICTC Ambassador Program for gender equity in Canada's tech ecosystem.* https://ictc-ctic.ca/our-impact/case-studies/ictc-ambassador-program-for-gender-equity-in-canadas-tech-ecosystem
Innovation, Science and Economic Development Canada. (n.d.). *Glossary*. Government of Canada. https://ised-isde.canada.ca/site/innovative-solutions-canada/en/glossary
Innovation, Science and Economic Development Canada (ISED). (n.d.). *Women Entrepreneurship Strategy success story – Tea Horse.* https://ised-isde.canada.ca/site/women-entrepreneurship-strategy/en/women-entrepreneurship-strategy-success-stories/women-entrepreneurship-strategy-success-story-tea-horse
Innovation, Science and Economic Development Canada. (2019). *Building a Nation of Innovators*. Government of Canada. https://ised-isde.canada.ca/site/innovation-better-canada/sites/default/files/attachments/New_ISEDC_19-044_INNOVATION-SKILLS_E_web.pdf
Innovation, Science and Economic Development Canada. (2020, July 20). *Introduction to Intellectual Property Rights and the Protection of Indigenous Knowledge and Cultural Expressions in Canada*. https://ised-isde.canada.ca/site/intellectual-property-strategy/en/introduction-intellectual-property-rights-and-protection-indigenous-knowledge-and-cultural
Innovation, Science and Economic Development Canada. (2021, May 31). *Black Entrepreneurship Program*. Government of Canada. https://ised-isde.canada.ca/site/black-entrepreneurship-program/en
Innovation, Science and Economic Development Canada. (2022). *2022 Cleantech Industry Survey Results*. Government of Canada. https://ised-isde.canada.ca/site/clean-growth-hub/en/clean-technology-data-strategy/2022-cleantech-industry-survey-results
Innovation, Science and Economic Development Canada. (2022). *SME Profile: Ownership demographics statistics, August 2022.* Government of Canada. https://ised-isde.canada.ca/site/sme-research-statistics/en/research-reports/sme-profile-ownership-demographics-statistics-2022
Innovation, Science and Economic Development Canada. (2023, March 16). *WES Ecosystem Fund*. Government of Canada. https://ised-isde.canada.ca/site/wes-ecosystem-fund/en

Innovation, Science and Economic Development of Canada. (2023, December 18). *Funding amounts and conditions: Strategic Innovation Fund*. Government of Canada. https://ised-isde.canada.ca/site/strategic-innovation-fund/en/project-requirements/funding-amounts?utm
Innovation, Science and Economic Development Canada. (2023). *Canadian ICT Sector Profile 2023. Government of Canada.* https://ised-isde.canada.ca/site/digital-technologies-ict/en/canadian-ict-sector-profile
Innovation, Science and Economic Development Canada. (2023). *Reporting requirements: Strategic Innovation Fund*. Government of Canada. https://ised-isde.canada.ca/site/strategic-innovation-fund/en/project-requirements/reporting
Innovation, Science and Economic Development Canada. (2024a, May 28). Women Entrepreneurship Loan Fund. Government of Canada. https://ised-isde.canada.ca/site/women-entrepreneurship-strategy/en/women-entrepreneurship-loan-fund
Innovation, Science, and Economic Development Canada. (2023, December 18). *Net Zero Accelerator Initiative.* Government of Canada. https://ised-isde.canada.ca/site/strategic-innovation-fund/en/net-zero-accelerator-initiative
Innovation, Science and Economic Development Canada. (2024b). *Strategic Science Fund program guide*. https://ised-isde.canada.ca/site/strategic-science-fund/sites/default/files/documents/SSF-Program-Guide.pdf
International Business Innovation Association. (2023). *InBIA Impact Survey FY23*. https://inbia.org/inbia-research/
International Labour Organization & OECD. (2022, November). *Promoting a just and inclusive green transition*. https://www.ilo.org/media/368196/download
International Trademark Association. (2024, July 24). *Shattering systemic barriers: How to advance gender diversity in the intellectual property profession*. International Trademark Association. https://www.inta.org/perspectives/inta-research/how-to-advance-gender-equality-in-the-intellectual-property-profession/
Isenberg D. J. (2010). How to start an entrepreneurial revolution. *Harvard Business Review, 88*(6), 40–50. https://institute.coop/sites/default/files/resources/Isenberg%20-%20How%20to%20Start%20an%20Entrepreneurial%20Revolution.pdf
ISO. (n.d.). *Sustainability: Diversity and Inclusion*. https://www.iso.org/strategy2030/key-areas-of-work/diversity-and-inclusion.html
ISO. (2023). *Gender Action Plan: Repository Submission.* United Nations Economic Commission for Europe (UNECE). https://unece.org/sites/default/files/2023-12/ISO-GAP_repository_submission.pdf
Ivus, M. (2020). *ICT Sector Annual Review 2019 Part 3*. The Information and Communications Technology Council. https://ictc-ctic.ca/articles/ict-sector-annual-review-2019-part-3
Jakobsh, K. and Boskov, S. (2020). *Breaking Barriers. A decade of Indigenous women's entrepreneurship in Canada.* https://www.ccab.com/wp-content/uploads/2020/12/CCAB_Breaking-Barriers_English.pdf
Jennings, J. E., Rahman, Z., & Dempsey, D. (2023). Challenging What We Think We Know: Theory and Evidence for Questioning Common Beliefs About the Gender Gap in Entrepreneurial Confidence. *Entrepreneurship Theory and Practice*, 47(2), 369-397. https://doi.org/10.1177/10422587221102108
Jiang, K. (2023). *Canada's Environmental and Clean Technology Sector.* Global Affairs Canada. https://www.international.gc.ca/trade-commerce/economist-economiste/analysis-analyse/ect-etp.aspx?lang=eng
Joshi, M., & Tu, J. (2024). *The effect of business accelerators and incubators on business performance: Findings from the Business Accelerator and Incubator Performance Measurement Framework*. Innovation, Science and Economic Development Canada. https://ised-isde.canada.ca/site/sme-research-statistics/sites/default/files/documents/2024-the-effect-of-bai-on-business-performance-en.pdf
Kalkanci, B., Rahmani, M., & Toktay, L. B. (2019). The role of inclusive innovation in promoting social sustainability. *Production and Operations Management, 28*(12), 2960-2982. https://doi.org/10.1111/poms.13112
Kalliomäki, H., Kalliokoski, J., Woodson, T., Kunttu, L., & Kuusisto, J. (2024). Inclusion as a science, technology, and innovation policy objective in high-income countries: The decoupling dilemma. *Science and Public Policy, 51*(5), 795-807. https://doi.org/10.1093/scipol/scae019
Kamalumpundi, V., Neikirk, K., Mukaz, D. K., Vue, Z., Vue, N., Perales, S., & Hinton, A. (2024). Diversity, equity, and inclusion in a polarized world: Navigating challenges and opportunities in STEMM. *Molecular Biology of the Cell, 35*(11). https://doi.org/10.1091/mbc.e24-06-0264
Kanda, W., Geissdoerfer, M., & Hjelm, O. (2021). From circular business models to circular business ecosystems. *Business Strategy and the Environment, 30*(6), 2814-2829. https://doi.org/10.1002/bse.2895
Kandiah, G., & Gossain, S. (1998). Reinventing value: The new business ecosystem. *Strategy & Leadership, 26*(5), 28-33. https://doi.org/10.1108/eb054622
Kathiresan, T., Verma, A., & Dellwo, V. (2022). *Gender bias in voice recognition: An i- and x-vector-based gender-specific automatic speaker recognition study*. Department of Computational Linguistics, University of Zurich.
Kauh, T. J., Read, J. G., & Scheitler, A. J. (2021). The critical role of Racial/Ethnic Data disaggregation for health equity. *Population Research and Policy Review, 40*(1), 1–7. https://doi.org/10.1007/s11113-020-09631-6
Kazmi, N. (2022). *Diversity, Equity and Inclusion within STEM in Canada: A Literature Review*. https://www.uvic.ca/coop/_assets/docs/partnerships-dei-lit-review.pdf
Kher, R., Yang, S., & Newbert, S. L. (2023). Accelerating emergence: the causal (but contextual) effect of social impact accelerators on nascent for-profit social ventures. *Small Business Economics, 61*(1), 389-413. https://doi.org/10.1007/s11187-022-00680-z
Kohl, R. D. (2023). Key factors for advancing innovations to scale: Evidence from multiple country case studies of agricultural innovations. *Frontiers in Sustainable Food Systems, 7*. https://doi.org/10.3389/fsufs.2023.1053152

Kolavalli, C. (2022, December 12). Community-engaged entrepreneurship research: Methodologies to advance equity and inclusion. *Ewing Marion Kauffman Foundation.* https://www.kauffman.org/reports/community-engaged-entrepreneurship-research-methodologies/
Korn Ferry Research. (n.d.). *The importance of inclusion in the workplace*. https://www.kornferry.com/insights/featured-topics/diversity-equity-inclusion/the-importance-of-inclusion-in-the-workplace
Kreiterling, C. (2023). Digital innovation and entrepreneurship: a review of challenges in competitive markets. *Journal of Innovation and Entrepreneurship, 12*(1). https://doi.org/10.1186/s13731-023-00320-0
Kuhlmann, S., & Rip, A. (2014). *The Challenge of Addressing Grand Challenges: A Think Piece on How Innovation Can Be Driven towards the" Grand Challenges" as Defined under the Prospective European Union Framework Programme Horizon 2020*. Brussels: European Commission; European Research and Innovation Area Board (ERIAB).
Kymn, C. (2014). *Access to capital for women- and minority-owned businesses: Revisiting key variables (Issue Brief No. 3)*. U.S. Small Business Administration, Office of Advocacy. https://advocacy.sba.gov/wp-content/uploads/2014/01/issue-brief-3-access-to-capital.pdf
Lau, V. W., Scott, V. L., Warren, M. A., & Bligh, M. C. (2023). Moving from problems to solutions: A review of gender equality interventions at work using an ecological systems approach. *Journal of Organizational Behavior*, 44(2), 399–419. https://doi.org/10.1002/job.2654
Leavy, S. (2018). Gender bias in artificial intelligence: The need for diversity and gender theory in machine learning. In *Proceedings of the 1st International Workshop on Gender Equality in Software Engineering (GE '18),* 14-16. https://doi.org/10.1145/3195570.3195580
Liamputtong, P. (2006). *Researching the vulnerable: A guide to sensitive research methods*. https://methods.sagepub.com/book/researching-the-vulnerable
Li, B., Bosse, J., Fair, R. & Johnston, C. (2022, December 15). *Analysis on businesses majority-owned by immigrants to Canada and businesses majority-owned by rationalized persons, fourth quarter of 2022.* Statistics Canada. https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2022021-eng.htm
Lin, L., & Zhao, L. (2022). CCR model-based evaluation on the effectiveness and maturity of technological innovation. J*ournal of Industrial and Management Optimization, 18*(2), 1425-1437. 10.3934/jimo.2021026
Lindberg, M., Schiffbaenker, H. (2020). Gender and Innovation. In *Carayannis, E.G. (eds) Encyclopedia of Creativity, Invention, Innovation and Entrepreneurship*. Springer.. https://doi.org/10.1007/978-3-319-15347-6_454
Liu, J., Guo, X., Xu, S., Bu, Y., Sugimoto, C. R., Larivière, V., Song, Y., & Zhou, H. (2024). Understanding super-partnerships in scientific collaboration: Evidence from the field of economics. *Journal of the Association for Information Science and Technology, 75*(6), 717–733. https://doi.org/10.1002/asi.24876
Lowey, M. (2021, April 21). *Strategic Innovation Fund producing significant benefits for Canadians, ISED says*. Research Money. https://researchmoneyinc.com/article/strategic-innovation-fund-producing-significant-benefits-for-canadians-ised-says
Lukeš, M., Longo, M. C., & Zouhar, J. (2019). Do business incubators really enhance entrepreneurial growth? Evidence from a large sample of innovative Italian start-ups. *Technovation, 82*, 25-34. https://doi.org/10.1016/j.technovation.2018.07.008
Lumpkin, J. R., & Ireland, R. D. (1988). Screening practices of new business incubators: the evaluation of critical success factors. *American Journal of Small Business, 12*(4), 59-81. 10.1177/104225878801200404
Lynch, R. G., & Woudstra, I. (2025, January 9). *The EDI Landscape: Predictions and Trends For 2025*. Voice at The Table. https://www.voiceatthetable.com/blog/the-edi-landscape-predictions-and-trends-for-2025/
Macchione, A.L., Sacco, D. & Brown, M. (2024). Comparing the efficacy of two inclusivity interventions on willingness to invest in female- versus male-led STEM and non-STEM companies. *Journal for STEM Education Research.* https://doi.org/10.1007/s41979-024-00136-x
Mack, E., & Mayer, H. (2016). The evolutionary dynamics of entrepreneurial ecosystems. *Urban studies, 53*(10), 2118-2133. https://doi.org/10.1177/0042098015586547
MacLatchy, D., & Ghose, S. (2024, February 9). *Achieving equity in STEM benefits us all.* Wilfrid Laurier University. https://www.wlu.ca/about/governance/senior-leadership/president/news/2024/winter/international-day-for-women-and-girls-in-science.html
Macklin, R. (2014). Respect for cultural diversity and pluralism. *Handbook of global bioethics, 1,* 153-167. https://link.springer.com/referenceworkentry/10.1007/978-94-007-2512-6_75
MacQuarrie, E. R., Simon, C., Simmons, S., & Maine, E. (2020). The emerging commercial landscape of quantum computing. *Nature Reviews Physics, 2*(11), 596–598. https://doi.org/10.1038/s42254-020-00247-5
Mäkinen, S. J., & Dedehayir, O. (2012, June). Business ecosystem evolution and strategic considerations: A literature review. In *2012 18th International ICE Conference on Engineering, Technology and Innovation* (pp. 1-10).
Maine, E., Lubik, S., & Garnsey, E. (2011). Process-based vs. product-based innovation: Value creation by nanotech ventures. *Technovation, 32*(3-4), 179–192. https://doi.org/10.1016/j.technovation.2011.10.003
Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. Geography compass, 12(3), e12359.
Malek, K., Maine, E., & McCarthy, I. P. (2013). A typology of clean technology commercialization accelerators. *Journal of Engineering and Technology Management, 32*, 26–39. https://doi.org/10.1016/j.jengtecman.2013.10.006
Martin, J. L., & Wright, K. E. (2023). Bias in Automatic Speech Recognition: The Case of African American Language. *Applied Linguistics, 44*(4), 613-630. https://doi.org/10.1093/applin/amac066

Mason C., Brown R. (2014). Entrepreneurial ecosystems and growth-oriented entrepreneurship. *Final report to OECD, Paris, 30*(1), 77–102.
Mattheis, A., De Arellano, D. C. R., & Yoder, J. B. (2019). A model of Queer STEM identity in the workplace. *Journal of Homosexuality, 67*(13), 1839–1863. https://doi.org/10.1080/00918369.2019.1610632
Mayer, R. C., Warr, R. S., & Zhao, J. (2018). Do Pro-Diversity Policies Improve Corporate Innovation? *Financial Management, 47*(3), 617-650. https://doi.org/10.1111/fima.12205
McAdam, M., Harrison, R. T., & Leitch, C. M. (2019). Stories from the field: Women's networking as gender capital in entrepreneurial ecosystems. *Small Business Economics, 53*, 459-474. https://doi.org/10.1007/s11187-018-9995-6
McGee, E. O. (2020). Interrogating structural racism in STEM higher education. *Educational Researcher, 49*(9), 633-644. https://doi.org/10.3102/0013189X20972718
McGuire, E., Al-Zu'bi, M., Boa-Alvarado, M., Luu, T. T. G., Sylvester, J. M., & Leñero, E. M. V. (2024). Equity principles: Using social theory for more effective social transformation in agricultural research for development. *Agricultural Systems, 218.* https://doi.org/10.1016/j.agsy.2024.103999
McKenzie, K. (2021). Socio-demographic data collection and equity in COVID-19 in Toronto. *EClinicalMedicine, 34*, 100812. https://doi.org/10.1016/j.eclinm.2021.100812
McKinsey & Company. (2023, May 10). *It's (past) time to get strategic about DEI.* https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/its-past-time-to-get-strategic-about-dei
Medhora, R., Bawa, K., Bergen, B., Blit, J., Ciuriak, D., Clarke, W., Desai, N., Geist, M., Gold, R., Haggart, B., Hirsh, J., Kahin, B., Lawrence, L., Lombardi, D., Spence, M., Tawfik, M., Van Harten, G., & Wolfe, D. (2017). *New thinking on innovation*. Centre for International Governance Innovation. https://www.cigionline.org/static/documents/documents/Innovation%20Special%20Report%20WEB_0.pdf
Melvin, A. (2023, October 27). *Postsecondary educational attainment and labour market outcomes among Indigenous peoples in Canada, findings from the 2021 Census*. Statistics Canada. https://www150.statcan.gc.ca/n1/en/pub/75-006-x/2023001/article/00012-eng.pdf
Mercan, B., & Goktas, D. (2011). Components of innovation ecosystems: A cross-country study. *International research journal of finance and economics, 76*(16), 102-112. https://doi.org/10.1002/isd2.12137
Merone, L., Tsey, K., Darren, R., & Nagle, C. (2022). Sex Inequalities in Medical Research: A Systematic Scoping Review of the Literature. *Women's Health Reports, 3*(1), 49-59. https://doi.org/10.1089/whr.2021.0083
Meza-Mejia, M. del C., Villarreal-García, M. A., & Ortega-Barba, C. F. (2023). *Women and Leadership in Higher Education: A Systematic Review. Social Sciences, 12*(10), 555-585. https://doi.org/10.3390/socsci12100555
Mian, S. A. (1996). The university business incubator: A strategy for developing new research/technology-based firms. *The Journal of High Technology Management Research, 7*(2), 191-208. https://doi.org/10.1016/S1047-8310(96)90004-8
Miller, D., & Le Breton-Miller, I. (2017). Underdog entrepreneurs: A model of challenge–based entrepreneurship. E*ntrepreneurship Theory and Practice, 41*(1), 7-17. https://doi.org/10.1111/etap.12253
Mmbaga, N. A., Mathias, B. D., Williams, D. W., & Cardon, M. S. (2020). A review of and future agenda for research on identity in entrepreneurship. *Journal of Business Venturing, 35*(6), 106049. https://doi.org/10.1016/j.jbusvent.2020.106049
Molinier, H. (2023, March 3). How standards shape a gender-responsive technological transformation. *ISO*. https://www.iso.org/contents/news/2023/03/gender-responsive-technology.html
Morgan, H. M. (2020). *Underdog entrepreneurs: A framework of success for marginalized and minority innovators*. Palgrave Macmillan.
Mortazavi, S., Eslami, M., Hajikhani, A., & Väätänen, J. (2021). Mapping inclusive innovation: A bibliometric study and literature review. *Journal of Business Research, 122*, 736–50. https://doi.org/10.1016/j.jbusres.2020.07.030.
Motoyama, Y., Golatt, H., & Etienne, H. (2023). Building an inclusive ecosystem for minority and women entrepreneurs: A case study of Columbus. *Local Economy, 38*(7), 697-716. https://doi.org/10.1177/02690942241254049
Mtonga-Clare, M., & Lafrance-Cooke, A. (2024). Economic and Social Reports–A profile of women inventors in Canada. Statistics Canada. https://doi.org/10.25318/36280001202400200001-eng
Mugo, S., & Puplampu, K. P. (2022). Beyond tokenism and objectivity: theoretical reflections on a transformative equity, diversity, and inclusion agenda for higher education in Canada. *SN social sciences, 2*(10), 209. https://doi.org/10.1007/s43545-022-00509-2
Munroe, D., & Zacharia, J. (2023). *Inclusive Innovation Monitor: Tracking growth, inclusion, and distribution for a more prosperous, just society.* Brockfield Institute of Entrepreneurship + Innovation and Munk School of Global Affairs & Public Policy. https://dais.ca/wp-content/uploads/2023/10/Inclusive_Innovation_Monitor-Report.pdf
Munro, D. (2019). *Why Canada Needs a More Diverse Tech Workforce*. Innovation Policy Lab, Munk School of Global Affairs and Public Policy at the University of Toronto. https://www.cigionline.org/articles/why-canada-needs-more-diverse-tech-workforce/
National Academies of Sciences, Engineering, and Medicine. (2023). *A governance framework for aligning innovation in health and medicine with equity.* National Academies Press. https://www.ncbi.nlm.nih.gov/books/NBK599709/
National Aboriginal Capital Corporations Association (NACCA). (n.d.). *About us*. https://nacca.ca/about/
National Research Council & KPMG LLP. (2018). *Evaluation of the Canada Accelerator and Incubator Program* (CAIP). https://nrc.canada.ca/sites/default/files/2019-04/caip_final_report_6.12.18.pdf

National Research Council. (2014). *Capturing change in Science, Technology, and Innovation: Improving indicators to inform policy*. The National Academies Press. https://doi.org/10.17226/18606.
National Science Board. (2016). *Science and Engineering Indicators 2016*. National Science Foundation. https://www.nsf.gov/nsb/publications/2016/nsb20161.pdf
Natural Sciences and Engineering Research Council of Canada. (2018). *Tri-Agency EDI Action Plan for 2018-2025*. https://www.nserc-crsng.gc.ca/InterAgency-Interorganismes/EDI-EDI/Action-Plan_Plan-dAction_eng.asp
Natural Sciences and Engineering Research Council of Canada. (n.d.). *Tri-Agency Equity, Diversity, and Inclusion (EDI) Action Plan.* https://www.nserc-crsng.gc.ca/InterAgency-Interorganismes/EDI-EDI/Action-Plan_Plan-dAction_eng.asp
Natural Sciences and Engineering Research Council of Canada. (n.d.). *NSERC guide on integrating equity, diversity and inclusion considerations in research*. Government of Canada. https://www.nserc-crsng.gc.ca/NSERC-CRSNG/Policies-Politiques/EDI_guidance-Conseils_EDI_eng.asp
Natural Sciences and Engineering Research Council of Canada. (n.d.). *Equity, diversity, and inclusion (EDI) action plan.* Natural Sciences and Engineering Research Council of Canada. https://www.nserc-crsng.gc.ca/InterAgency-Interorganismes/EDI-EDI/Action-Plan_Plan-dAction_eng.asp?
Natural Resources Canada. (2023). *Case Study: Women in Cleantech Challenge*. Impact Canada. https://impact.canada.ca/en/case-studies/wict
Newswire. (n.d.). *New research shows women entrepreneurs benefiting from Canada's Women Entrepreneurship Strategy and women business ownership holding steady*. Retrieved January 16, 2025, from https://www.newswire.ca/news-releases/new-research-shows-women-entrepreneurs-benefiting-from-canada-s-women-entrepreneurship-strategy-and-women-business-ownership-holding-steady-891182284.html
Neumeyer, X., Santos, S. C., Caetano, A., & Kalbfleisch, P. (2019). Entrepreneurship ecosystems and women entrepreneurs: a social capital and network approach. *Small Business Economics, 53*, 475-489. https://doi.org/10.1007/s11187-018-9996-5
Ng, E. S., & Gagnon, S. (2020). *Employment gaps and underemployment for racialized groups and immigrants in Canada: Current findings and future directions*. Future Skills Centre. https://fsc-ccf.ca/wp-content/uploads/2020/01/EmploymentGaps-Immigrants-PPF-JAN2020-EN.pdf
Nielsen, M. W., Bloch, C. W., & Schiebinger, L. (2018). Making gender diversity work for scientific discovery and innovation. *Nature Human Behaviour, 2*(10), 726–734. https://doi.org/10.1038/s41562-018-0433-1
Nkrumah, T., & Scott, K. A. (2022). Mentoring in STEM higher education: a synthesis of the literature to (re)present the excluded women of color. *International Journal of STEM Education, 9*(1). https://doi.org/10.1186/s40594-022-00367-7
Nurasa, H., Abdillah, A., Adikancana, Q. M., & Widianingsih, I. (2024). Organization ecosystem for inclusive development in Indonesia: a bibliometric analysis and literature review. *Cogent Social Sciences, 10*(1). https://doi.org/10.1080/23311886.2024.2368949
Nwaokocha, D. (2021). Diversity in Canadian Venture Capital: Creating equity. *Ivey Business Review*. https://www.iveybusinessreview.ca/magazine/articles/diversity-in-canadian-venture-capital-building-equity
OECD & Eurostat. (2018). *Oslo Manual 2018: Guidelines for collecting, reporting and using data on innovation, 4th edition.* https://doi.org/10.1787/9789264304604-en
OECD. (1997). *Proposed guidelines for collecting and interpreting technological innovation data: Oslo Manual.* https://doi.org/10.1787/9789264192263-en
OECD. (2010). *Measuring Innovation: A New Perspective*. OECD Publishing. https://doi.org/10.1787/9789264059474-en
OECD. (2015a). *Innovation Policies for Inclusive Growth*. OECD Publishing. https://doi.org/10.1787/9789264229488-en
OECD. (2015b). *Frascati Manual 2015: Guidelines for collecting and reporting data on research and experimental development*. OECD Publishing. https://doi.org/10.1787/9789264239012-en.
OECD. (2016). System innovation. In *OECD Science, Technology and Innovation Outlook 2016*. OECD Publishing. https://doi.org/10.1787/sti_in_outlook-2016-9-en.
OECD. (2023a). *OECD Science, Technology and Innovation Outlook 2023*. OECD Publishing. https://doi.org/10.1787/0b55736e-en.
OECD. (2023b). *Navigating green and digital transitions: Five imperatives for effective STI policy. OECD Science, Technology and Industry Policy Papers.* https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/11/navigating-green-and-digital-transitions_5c462250/dffb0747-en.pdf
OECD. (2024, March 19). *Enhancing rural innovation in Canada*. OECD Publishing. https://doi.org/10.1787/a9919c66-en
OECD. (n.d.). *Main Science and Technology Indicators*. OECD Datasets. https://www.oecd.org/en/data/datasets/main-science-and-technology-indicators.html
Office of the Procurement Ombudsman. (2023, March 28). *Procurement set-aside programs*. Government of Canada. https://opo-boa.gc.ca/pmr-psp-eng.html
Onside. (2021, September). *Driving inclusive, innovation-driven entrepreneurship in Nova Scotia through collective impact.* https://onsidenow.ca/impact-report
ONSIDE. (n.d.). Start Now Incubator. https://startnowincubator.ca/
Ontario Society of Professional Engineers. (2017). *What are the "barriers facing women in STEM?"* https://ospe.on.ca/advocacy/barriers-facing-women-stem/
Ontario Society of Professional Engineers. (2018). *Calling all STEM employers: Why workplace cultures must shift to change the gender landscape.* https://diversifystem.ca/wp-content/uploads/2019/04/breaking_barriers_white_paper_report_single.compressed.pdf

Ontario Society of Professional Engineers. (2024). *Trends in the engineering profession: Observation and analysis from the 2021 Canadian census.* https://ospe.on.ca/wp-content/uploads/2024/09/Census-Article-ALL-July2024-Final.pdf

Orser, B., Riding, A., & Li, Y. (2019). *Technology adoption and gender-inclusive entrepreneurship education and training.*International Journal of Gender and Entrepreneurship, 11(3), 273-298.

Owalla, B., Nyanzu, E., & Vorley, T. (2021). Intersections of gender, ethnicity, place and innovation: Mapping the diversity of women-led SMEs in the United Kingdom. *International Small Business Journal, 39*(7), 681-706. https://doi.org/10.1177/0266242620981877

Owen, R., Macnaghten, P., & Stilgoe, J. (2012). Responsible research and innovation: From science in society to science for society, with society. *Science and Public Policy, 39*(6), 751–760. https://doi.org/10.1093/scipol/scs093

Ozkan, M., Krishnaswamy, K., & Walsh, J. (2023). The Intersections of Innovation. *Technology & Innovation 22*(4),437-445. https://doi.org/10.21300/22.4.2023.3"

Ozkazanc-Pan, B., & S. C. Muntean. (2021). *Entrepreneurial ecosystems: A gender perspective*. Cambridge University Press.

Paesani, V. (Host). (2022, October 14). *Amplified #10: Creating an inclusive economy, with Alexandra McCann* [Audio podcast episode]. Amplified Podcast. https://amplifiedpodcast.ca/2022/10/14/amplified-10-creating-an-inclusive-economy-with-alexandra-mccann/

Palalar Alkan, D., Ozbilgin, M., & Kamasak, R. (2022). Social innovation in managing diversity: COVID-19 as a catalyst for change. Equality, Diversity and Inclusion: *An International Journal, 41*(5), 709–725. https://doi.org/10.1108/edi-07-2021-0171

Palid, O., Cashdollar, S., Deangelo, S., Chu, C., & Bates, M. (2023). Inclusion in practice: A systematic review of diversity-focused STEM programming in the United States. *International Journal of STEM Education, 10*(1), 2. https://doi.org/10.1186/s40594-022-00387-3

Parthasarathy, S. (2023). A tale of two perspectives on innovation and global equity. *Engaging Science, Technology, and Society 9*(2), 87–96. https://doi.org/10.17351/ests2023.1369

Peltoniemi, M., & Vuori, E. K. (2004). Business Ecosystem as the New Approach to Complex Adaptive Business Environments. In *Frontiers of E-Business Research* (pp. 267-281). Tampere: University of Tampere.

Penner, M. & Smith-Carrier, T. (2022). *Gender pay gap: it's roughly half-a-million dollars for women professors across a lifetime.* University Affairs. https://doi.org/10.47678/cjhe.vi0.189215

Peters, L., Rice, M., & Sundararajan, M. (2004). The role of incubators in the entrepreneurial process. The Journal of Technology Transfer, 29(1), 83-91. https://doi.org/10.1023/B:JOTT.0000011182.82350.df

Picot, G., & Ostrovsky, Y. (2020). *Analytical Studies Brand Research Paper Series–Innovation in Immigrant-owned Firms in Canada*. Statistics Canada. https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2020009-eng.htm

Picot, G., & Ostrovsky, Y. (2021). *Economic and Social Reports–Immigrant entrepreneurs in Canada: Highlights from recent studies*. Statistics Canada. https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021009/article/00001-eng.htm

Pokrajac, L., Abbas, A., Chrzanowski, W., Dias, G. M., Eggleton, B. J., Maguire, S., Maine, E., Malloy, T., Nathwani, J., Nazar, L., Sips, A., Sone, J., van den Berg, A., Weiss, P. S., & Mitra, S. (2021). Nanotechnology for a Sustainable Future: Addressing Global Challenges with the International Network4Sustainable Nanotechnology. *ACS Nano, 15*(12), 18608–18623. https://doi.org/10.1021/acsnano.1c10919

Ponds, R., van Oort, F., & Frenken, K. (2010). Innovation, spillovers and university–industry collaboration: An extended knowledge production function approach. *Journal of Economic Geography, 10*(2), 231–255. https://doi.org/10.1093/jeg/lbp036

Power, K., Rak, L., & Kim, M. (2019). Women in business media: A Critical Discourse Analysis of Representations of Women in Forbes, Fortune and Bloomberg BusinessWeek, 2015-2017. *Critical Approaches to Discourse Analysis Across Disciplines, 11*(2). https://www.lancaster.ac.uk/fass/journals/cadaad/wp-content/uploads/2020/02/Vol11.2-1-Power-Rak-Kim.pdf

Precedence Research (2024). *Femtech Market Size, Share, and Trends 2024 to 2033.* https://www.precedenceresearch.com/femtech-market

Public Services and Procurement Canada. (2022, November 24). D*iversity and inclusion in procurement: Standing Committee on Government Operations and Estimates*. Government of Canada. https://www.tpsgc-pwgsc.gc.ca/trans/documentinfo-briefingmaterial/oggo/2022-11-24/p5-eng.html?wbdisable=true

Public Services and Procurement Canada. (2023, May 29). *Diversity and inclusion in procurement: Briefing material for the Standing Committee on Government Operations and Estimates.* Government of Canada. https://www.canada.ca/en/public-services-procurement/corporate/transparency/briefing-materials/standing-committee-government-operations-estimates/2023-05-29/diversity-inclusion-procurement.html

Public Services and Procurement Canada. (n.d.). *Policy on Social Procurement.* Public Works and Government Services Canada.https://www.canada.ca/en/public-services-procurement/services/acquisitions/social-procurement/policy.htm
Public Services and Procurement Canada. (2023, May 29). *Diversity and inclusion in procurement: Briefing material for the Standing Committee on Government Operations and Estimates.* Government of Canada. https://www.canada.ca/en/public-services-procurement/corporate/transparency/briefing-materials/standing-committee-government-operations-estimates/2023-05-29/diversity-inclusion-procurement.html
Public Services and Procurement Canada. (n.d.). *Supplier diversity action plan*. Government of Canada. Retrieved January 16, 2025, from https://www.canada.ca/en/public-services-procurement/services/acquisitions/social-procurement/supplier-divsersity-action-plan.html

Queen's University. (2023). *What does Canada need to become a world science leader?* https://www.queensu.ca/gazette/stories/what-does-canada-need-become-world-science-leader

QueerTech. (2024). *Queering the Tech Ecosystem: Barriers and Opportunities.* https://21024092.fs1.hubspotusercontent-na1.net/hubfs/21024092/Research%20Reports/UPDATED_BarriersAndOpportunities_QTResearchReport_2024_Final%20Report_Public%20Version%20(Free)_16_Sep_2024.pdf
Quichocho, X. R., Conn, J., Schipull, E. M., & Close, E. W. (2020). Who does physics? Understanding the composition of physicists through the lens of women of color and LGBTQ+ women physicists. Per-Central.org, 488–493. https://www.per-central.org/items/detail.cfm?ID=15325
Ràfols, I. (2018). S&T indicators in the wild: Contextualization and participation for responsible metrics. *Research Evaluation, 28*(1), 7–22. https://doi.org/10.1093/reseval/rvy030
Ramiah, R., Godinho, L., & Wilson, C. (2022). Tertiary STEM for all: Enabling student success through teaching for equity, diversity and inclusion in STEM. *International Journal of Innovation in Science and Mathematics Education, 30*(3). https://doi.org/10.30722/ijisme.30.03.003
Rego, L., & Gergen, C. (2017). Fostering inclusive innovation ecosystems. In *A. Boitano, R.L. Dutra, & H.E. Schockman. (Eds.), Breaking the zero-sum game: Transforming societies through inclusive leadership* (pp. 43-57). Emerald Publishing Limited.
Reid, A. J., Eckert, L. E., Lane, J., Young, N., Hinch, S. G., Darimont, C. T., Cooke, S. J., Ban, N. C., & Marshall, A. (2021). "Two-Eyed Seeing": An Indigenous framework to transform fisheries research and management. *Fish and Fisheries, 22*(2), 243–261. https://doi.org/10.1111/faf.12516
Reinsch, W. A., & Denamiel, T. (2023, February 6). Immigration policy's role in bolstering the U.S technology edge. *CSIS*. https://www.csis.org/analysis/immigration-policys-role-bolstering-us-technology-edge
Rencheck, M., Chegahno, M., Hayashi, K., Roberts, O., & Tucker, D. (2023, July 27). Canada's next big bet needs to be on medical isotopes. *The Hill Times*. https://www.hilltimes.com/story/2023/07/27/canadas-next-big-bet-needs-to-be-on-medical-isotopes/393377/
Richey, C. R., Lee, K. M. N., Rodgers, E., & Clancy, K. B. H. (2020). Gender and sexual minorities in astronomy and planetary science face increased risks of harassment and assault*. Bulletin of the AAS, 51*(4). https://doi.org/10.3847/25c2cfeb.c985281e
Roberts, S. O., Bareket-Shavit, C., Dollins, F. A., Goldie, P. D., & Mortenson, E. (2020). Racial Inequality in Psychological Research: Trends of the Past and Recommendations for the Future. *Perspectives on Psychological Science, 15*(6), 1295-1309. https://doi.org/10.1177/1745691620927709
Rogge, K. S., & Reichardt, K. (2016). Policy mixes for sustainability transitions: An extended concept and framework for analysis. *Research Policy, 45*(8), 1620–1635. https://doi.org/10.1016/j.respol.2016.04.004
Rossoni, A. L., de Vasconcellos, E.P.G. & de Castilho Rossoni, R.L. (2024). Barriers and facilitators of university-industry collaboration for research, development and innovation: a systematic review. *Management Review Quarterly 74*, 1841–1877. https://doi.org/10.1007/s11301-023-00349-1
Ruel, S., & Tajmel, T. (2024). At the intersection of science, technology, engineering, and mathematics and business management in Canadian higher education: An intentional equity, diversity, and inclusion framework. *Gender, Work & Organization, 31*(3), 821-850. https://doi.org/10.1111/gwao.13035
Ruiz-Jiménez, J. M., Mar, del, & Ruiz-Arroyo, M. (2014). Knowledge combination capability and innovation: The effects of gender diversity on top management teams in technology-based firms. *Journal of Business Ethics, 135*(3), 503–515. https://doi.org/10.1007/s10551-014-2462-7
Sá, C., Cowley, S., Martinez, M., Kachynska, N., & Sabzalieva, E. (2020). Gender gaps in research productivity and recognition among elite scientists in the US, Canada, and South Africa. *PloS one, 15*(10), e0240903. https://doi.org/10.1371/journal.pone.0240903
Salmon, E. J., Juan Francisco Chavez, R., Chavez R., J. F., Murphy, M., & Murphy, M. (2023). New perspectives and critical insights from Indigenous Peoples' research: A systematic review of Indigenous Management and Organization Literature. *Academy of Management Annals, 17*(2), 439-491. http://doi.org/10.5465/annals.2021.0132
Sandekian, R. E. (2017). *(Dis)Integrated identities: Experiences of tenure-track engineering faculty who identify as sexual minorities*. [Doctoral thesis, University of Northern Colorado]. UNCOpen.
SCC-CCN. (n.d.). *Gender and standardization*. https://scc-ccn.ca/areas-work/diversity-and-inclusion/gender-and-standardization
Schilling, M. (2024). Strategic Management of Technological Innovation, 7th Edition. McGraw Hill
Schillo, R. S., & Ebrahimi, H. (2021). Gender dimensions of digitalisation: a comparison of Venture Capital backed start-ups across fields. (2022). *Technology Analysis & Strategic Management, 34*(7), 733-745. https://doi.org/10.1080//09537325.2021.1918336
Schillo, R. S., & Robinson, R. M. (2017). Inclusive innovation in developed countries: The who, what, why, and how. *Technology Innovation Management Review, 7*(7), 34–46. https://doi.org/10.22215/timreview/1089
Schillo, R. S., Isabelle, D. A., & Shakiba, A. (2017). Linking advanced biofuels policies with stakeholder interests: A method building on quality function deployment. *Energy Policy, 100*, 126–137. https://doi.org/10.1016/j.enpol.2016.09.056
Schillo, R. S., Persaud, A., & Jin, M. (2016). Entrepreneurial readiness in the context of national systems of entrepreneurship. *Small Business Economics, 46*(4), 619–637. https://doi.org/10.1007/s11187-016-9709-x
Schillo, S. & Puri, P. (2023). Inclusive innovation: Towards a theory of inclusive transitions. In F.J. Díaz López, M. Mazzanti, & R. Zoboli (Eds.), *Handbook of innovation indicators and measuremen*t (pp. 197-181), Edward Elgar Publishing.
Schlaile, M.P., Urmetzer, S., Ehrenberger, M.B., & Brewer, J. (2021). Systems entrepreneurship: a conceptual substantiation of a novel entrepreneurial "species". *Sustainability Science, 16*, 781–794. https://doi.org/10.1007/s11625-020-00850-6

Schmader, T. (2023). Gender inclusion and fit in STEM. *Annual Review of Psychology, 74*, 219-243. https://doi.org/10.1146/annurev-psych-032720-043052
Schwab, K. (2019). *The Global Competitiveness Report*. World Economic Forum. http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf
Schwartz, M., & Göthner, M. (2009). A Multidimensional Evaluation of the Effectiveness of Business Incubators: An Application of the PROMETHEE Outranking Method. *Environment and Planning C: Government and Policy, 27*(6), 1072-1087. https://doi.org/10.1068/c0897b
Science, Technology and Innovation Council. (2014). *State of the Nation 2014 - Canada's Science, Technology and Innovation System*. ResearchGate. https://doi.org/10.13140/RG.2.2.13558.96324
Sears, B., Mallory, C., Flores, A.R., & Conron, K.J. (2021). *LGBT People's Experiences of Workplace Discrimination and Harassment*. UCLA School of Law Williams Institute. https://williamsinstitute.law.ucla.edu/wp-content/uploads/Workplace-Discrimination-Sep-2021.pdf
Shams, R. A., Zowghi, D., & Bano, M. (2023). AI and the quest for diversity and inclusion: A systematic literature review. AI and Ethics, 1-28.
Shepherd, D. A., Wennberg, K., Suddaby, R., & Wiklund, J. (2019). What are we explaining? A review and agenda on initiating, engaging, performing, and contextualizing entrepreneurship. *Journal of Management, 45*(1), 159-196. https://doi.10.1177/0149206318811569
Sherman, H., & Chappell, D. S. (1998). Methodological challenges in evaluating business incubator outcomes. *Economic Development Quarterly, 12*(4), 313-321. https://doi.org/10.1177/089124249801200403
Shift Health. (2023). *Status of Inclusion, Diversity, Equity, and Accessibility (IDEA) in Canada's Life Sciences Sector.* https://inclusivelsc.ca/wp-content/uploads/2023/07/Status-of-IDEA-in-the-Life-Science-Sector-July-2023-FINAL-s.pdf
Shortt, D., Robson, B, & Sabat, M. (2020). Bridging the Digital Skills Gap: Alternative Pathways. Future Skills Centre. https://fsc-ccf.ca/wp-content/uploads/2020/01/DigitalSkills-AlternativePathways-PPF-JAN2020-EN.pdf
Siegel, D.S. & Guerrero, M. (2021). The Impact of Quarantines, Lockdowns, and 'Reopenings' on the Commercialization of Science: Micro and Macro Issues. *Journal of Management Studies 58*(5) https://doi-org.ezproxy.lib.torontomu.ca/10.1111/joms.12692
Sim, J., Jung, M., Eikenaar, J. H., & Chooniedass, R. (2024). Development of an Equity, Diversity, and Inclusion Curriculum initiative for undergraduate STEM students. *Journal of Teaching and Learning, 18*(2), 4–15. https://doi.org/10.22329/jtl.v18i2.8284
Sinha, S.Q., & Lebec, A. (2023). *Women entrepreneurs in these markets are a trillion-dollar opportunity*. World Economic Forum. https://www.weforum.org/stories/2023/06/women-entrepreneurs-frontier-markets-opportunity/
Skylight Science Education. (2019). *Review of themes and promising practices in STEM-based work on equity, diversity, and inclusion.* University of British Columbia. https://skylight.science.ubc.ca/review-themes-and-promising-practices-stem-based-work-equity-diversity-and-inclusion
Smilor, R. W. (1987). Managing the incubator system: critical success factors to accelerate new company development. *IEEE transactions on Engineering Management, 3*, 146-155. https://doi.10.1109/TEM.1987.6498875
Smith, M. (2021, December 13). Strategic Innovation Fund (SIF) How to receive funding. *Easly*. https://fundeasly.com/resources/blog/the-strategic-innovation-fund-sif-how-to-qualify/?utm
Smith-Carrier, T., Penner, M., Cecala, A., & Agócs, C. (2021). It's Not Just a Pay Gap: Quantifying the Gender Wage and Pension Gap at a Post-Secondary Institution in Canada. *Canadian Journal of Higher Education*, *51*(2), 74–84. https://doi.org/10.47678/cjhe.vi0.189215
Social Sciences and Humanities Research Council of Canada. (n.d.). *Best practices in equity, diversity and inclusion in research practice and design.* https://www.sshrc-crsh.gc.ca/funding-financement/nfrf-fnfr/edi-eng.aspx
Social Sciences and Humanities Research Council. (2024). *Action Plan for Black Researchers (2024-2029) - Phase I*. Government of Canada. https://www.sshrc-crsh.gc.ca/about-au_sujet/edi/plan_black_noir_phase-1-eng.aspx
Society for Canadian Women in Science and Technology. (n.d.). *SCWIST: Society for Canadian Women in Science and Technology.* https://scwist.ca/
Soetanto, D., & Jack, S. (2016). The impact of university-based incubation support on the innovation strategy of academic spin-offs. *Technovation, 50*, 25-40. https://doi.org/10.1016/j.technovation.2015.11.001
Sohail, K., Belitski, M., & Christiansen, L. C. (2023). Developing business incubation process frameworks: A systematic literature review. *Journal of Business Research, 162*, 113902.
Soman, N. (2023, October 31). How to Implement Portable Benefits for a Modern Workforce. *Decent*. https://www.decent.com/blog/how-to-implement-portable-benefits-for-a-modern-workforce
Sona, A., Santana, J.L., & Saitta, E. (2023). Looking through a prism: A systematic review of LGBTQ+ STEMLiterature. *Journal of Chemical Education 100*(1), 125-133. DOI: 10.1021/acs.jchemed.2c00391
Specht, A., & Crowston, K. (2022). Interdisciplinary collaboration from diverse science teams can produce significant outcomes. *PLoS ONE, 17*(11), e0278043. https://doi.org/10.1371/journal.pone.0278043
Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice, 41*(1), 49-72. https://doi.org/10.1002/sej.1268
Spigel, B., & Harrison, R. (2018). Toward a process theory of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal, 12*(1), 151-168.

Stacy, C., Su, Y., Noble, O., Stern, A., Blagg, K., Rainer, M., & Ezike, R. (2020). A*ccess to opportunity through equitable transportation: Lessons from four metropolitan regions*. Urban Institute. https://www.urban.org/sites/default/files/2023-08/Access%20to%20Opportunity%20through%20Equitable%20Transportation.pdf
Stam, E. (2015). Entrepreneurial ecosystems and regional policy: a sympathetic critique. *European Planning Studies, 23*(9), 1759-1769. https://doi.org/10.1080/09654313.2015.1061484
Stam, E. (2016). *Theorizing entrepreneurship in context. In A research agenda for entrepreneurship and context*, 93-108. Edward Elgar Publishing.
Stam, E. (2018). Measuring entrepreneurial ecosystems. In *A. O'Connor, E. Stam, F. Sussan, D. Audretsch (Eds.) Entrepreneurial ecosystems: Place-based transformations and transitions* 173-197. Springer .
Stam, E. & Van der Ven, A. (2021). *Entrepreneurial ecosystem elements*. Small Business Economics, Springer, vol. 56(2), pages 809-832. https://doi.10.1007/s11187-019-00270-6
Standards Council of Canada Innovation and Science, & Diversity Institute. (2021). Publicly Available Specification (PAS): The 50 – 30 challenge. https://secureservercdn.net/192.169.220.85/b0m.396.myftpupload.com/wp-content/uploads/2022/03/Di-PAS_EN_vf.pdf
Standing Senate of the Committee on Social Affairs, Science and Technology. (2023, March). *All together: The role of Gender-Based Analysis Plus in the policy process: Reducing barriers to an inclusive intersectional policy analysis.* Senate of Canada. https://sencanada.ca/content/sen/committee/441/SOCI/Reports/COM_SOCI_GBA-Plus_Report_E.pdf
Startup Canada. (n.d.). Startup women. https://www.startupcan.ca/explore/startup-women/
Statistics Canada. (2006). *National Occupational Classification for Statistics 2006 (720), Class of Worker (6) and Sex (3) for the Labour Force 15 Years and Over of Canada, Provinces, Territories, Census Metropolitan Areas and Census Agglomerations, 2006 Census.* https://www12.statcan.gc.ca/global/URLRedirect.cfm?lang=E&ips=97-559-XCB2006011
Statistics Canada. (2011). National Occupational Classification 2011 (691), Industry - North American Industry Classification System (NAICS) 2007 (122), Age Groups (5) and Sex (3) for the Employed Labour Force Aged 15 Years and Over, in Private Households of Canada, Provinces, Territories, Census Metropolitan Areas and Census Agglomerations, 2011 National Household Survey. https://www12.statcan.gc.ca/global/URLRedirect.cfm?lang=E&ips=99-012-X2011060
Statistics Canada. (2012). *A Profile of Self-employment in Rural and Small Town Canada: Is There an Impending Retirement of Self-employed Business Operators?* - ARCHIVED. https://www150.statcan.gc.ca/n1/pub/21-006-x/21-006-x2012001-eng.htm
Statistics Canada. (2016). National Occupational Classification 2016 (691), Employment Income Statistics (3), Highest Certificate, Diploma or Degree (7), Immigrant Status and Period of Immigration (10), Work Activity During the Reference Year (4), Age (5A) and Sex (3) for the Population Aged 15 Years and Over Who Worked in 2015 and Reported Employment Income in 2015. in *Private Households of Canada, Provinces and Territories, 2016 Census*. https://www12.statcan.gc.ca/global/URLRedirect.cfm?lang=E&ips=98-400-X2016355
Statistics Canada. (2018). *Aboriginal Population Profile, 2016 Census.* https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/abpopprof/details/page.cfm?Lang=E&Geo1=PR&Code1=01&Data=Count&SearchText=Canada&SearchType=Begins&B1=All&C1=All&SEX_ID=1&AGE_ID=1&RESGEO_ID=1
Statistics Canada. (2020a). *Survey of Postsecondary Faculty and Researchers, 2019*. https://www150.statcan.gc.ca/n1/daily-quotidien/200922/dq200922a-eng.htm
Statistics Canada. (2020b). Table 37-10-0167-01 College faculty and researchers involved in an academic or applied research project. https://doi.org/10.25318/3710016701-eng
Statistics Canada. (2020c). *Survey on Financing and Growth of Small and Medium Enterprises, 2020.* https://ised-isde.canada.ca/site/sme-research-statistics/en/research-reports/sme-profile-ownership-demographics-statistics-2022
Statistics Canada. (2022a). *Occupation by major field of study (STEM and BHASE, detailed): Canada, provinces and territories.* https://www12.statcan.gc.ca/census-recensement/2021/geo/maps-cartes/geosearch-georecherche/ips/index.cfm?q=98-10-0405-01&l=en&g=2021A000011124&t=001
Statistics Canada. (2022b). *Employment income statistics by occupation, major field of study and highest level of education: Canada*. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=9810041201
Statistics Canada. (2022c, November 24). *Study: Identifying Indigenous business owners and Indigenous-owned businesses* https://www150.statcan.gc.ca/n1/daily-quotidien/221124/dq221124e-eng.htm
Statistics Canada. (2023a). *Census Profile, 2021 Census of Population: Profile table.* https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&DGUIDList=2021A000011124&GENDERList=1,2,3&STATISTICList=1,4&HEADERList=0&SearchText=Canada
Statistics Canada. (2023b, January 17). *Indigenous-owned businesses in Canada: confronting challenges, forecasting growth.* https://www.statcan.gc.ca/o1/en/plus/2762-indigenous-owned-businesses-canada-confronting-challenges-forecasting-growth
Statistics Canada. (2024a, March 12). Innovation in Canadian businesses, 2020 to 2022. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2024013-eng.htm
Statistics Canada. (2024b, June 26). *Table 37-10-0268-01 Canadian post-secondary enrolments by visible minority group, educational qualification, field of study (STEM and BHASE (non-STEM) groupings), gender and age*. https://doi.org/10.25318/3710026801-eng

Statistics Canada. (2024c). *Gini coefficients of adjusted market, total and after-tax income* (Table 11-10-0134-01). https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110013401
Statistics Canada. (2024d). Facts, stats and impact: 2SLGBTQI+ communities. https://www.canada.ca/en/women-gender-equality/free-to-be-me/federal-action-2slgbtqi-communities/facts-stats.html?utm_source=chatgpt.com
Statistics Canada. (2025a). *Table 14-10-0365-01 Labour force characteristics by region and detailed Indigenous group, inactive*. https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1410036501
Statistics Canada. (2025b). *Table 14-10-0440-01 Labour force characteristics by visible minority group, annual*. https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1410044001
Statistics Canada. (2025c). *Table 14-10-0327-01 Labour force characteristics by gender and detailed age group, annual*. https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1410032701
Statistics Canada. (2023a). *Canadian Survey on Disability, 2017 to 2022*. https://www150.statcan.gc.ca/n1/daily-quotidien/231201/dq231201b-eng.htm
Statistics Canada. (2023b). *Table 98-10-0589-01 Occupation (STEM and non-STEM) by industry sectors, Indigenous identity, employment income statistics, occupation (training, education, experience and responsibility category - TEER), age and gender: Canada, provinces and territories*. https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=9810058901
Stoker, S., Rossano-Rivero, S., Davis, S., Wakkee, I., & Stroila, I. (2024). Pursuing entrepreneurial opportunities is not a choice: the interplay between gender norms, contextual embeddedness, and (in) equality mechanisms in entrepreneurial contexts. *International Journal of Entrepreneurial Behavior & Research.* https://doi.org/10.1108/IJEBR-12-2022-1139
Sui, S., Morgan, H. M., & Baum, M. (2015). Internationalization of immigrant-owned SMEs: The role of language. *Journal of World Business, 50*(4), 804-814. https://doi.org/10.1016/j.jwb.2015.04.002
Swedish Institute for Standards. (n.d.). *ISO/IWA 34 – Definition of a 'Woman-Owned Business' and guidance on its use.* https://www.sis.se/en/about_sis/isoiwa-34-definition-of-a-womanowned-business-and-guidance-on-its-use/
Syed, S. T., Gerber, B. S., & Sharp, L. K. (2013). Traveling towards disease: Transportation barriers to health care access. *Journal of Community Health, 38*(5), 976–993. https://doi.org/10.1007/s10900-013-9681-1
TAP Network. (2024). *Highlights from the 2024 Diversity in Tech Dashboard.* https://tapnetwork.ca/edib/diversity-in-tech dashboard#:~:text=Indigenous%20representation%20in%20the%20sector,than%20the%20Canadian%20census%20data.
Tartari, V., & Salter, A. (2015). The engagement gap: Exploring gender differences in University–Industry collaboration activities. *Research Policy, 44*(6), 1176-1191. https://www.sciencedirect.com/science/article/pii/S0048733315000165#sec0015
Taylor, J., Somayajula, N., & Burry, C. (n.d.). Blue economy innovation for sustainable growth: explore models of innovation and collaboration [Panel Discussion]. *ECO Canada*. https://eco.ca/online-learning/blue-economy-innovation-for-sustainable-growth/
TechNation. (n.d.). DEI and reconciliation. https://technationcanada.ca/en/dei-reconciliation/
Thai, Q.H., Mai, K.N., & Do, T. T. (2023). An evolution of entrepreneurial ecosystem studies: A systematic literature review and future research agenda. *SAGE Open, 13* (1). https://doi.org/10.1177/21582440231153060.
The Conference Board of Canada. (2024, April 11). 2024 Innovation Report Card: Benchmarking Canada's innovation performance. https://www.conferenceboard.ca/product/innovation-report-card_2024/
The Conference Board of Canada. (n.d.). Innovation. https://www.conferenceboard.ca/hcp/innovation-aspx-2/
The Conference Board. (2017, May 3). *The Conference Board signposts project–identifying ways to measure innovation.* https://www.conference-board.org/topics/innovation-leadership/Signposts-Project-Measuring-Innovation
The Inclusive Innovation Playbook. (n.d.). *Diversily*. https://diversily.thinkific.com/courses/the-inclusive-innovation-playbook?utm
The University of British Columbia. (n.d.). Equity, diversity and inclusion in research. https://responsible.research.ubc.ca/evolving-topics-responsible-research/equity-diversity-and-inclusion-research
The World Bank Group. (n.d.). Research and development expenditure (% of GDP). https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2022&start=1996&view=chart&year=2002
Thébaud, S. (2015). Business as plan B: institutional foundations of gender inequality in entrepreneurship across 24 industrialized countries. *Administrative Science Quarterly, 60*(4), 671–711. https://doi.org/10.1177/0001839215591627
Thébaud, S., & Charles, M. (2018). Segregation, Stereotypes, and STEM. *Social Sciences*, *7*(7), 111. https://doi.org/10.3390/socsci7070111
30% Club. (n.d.). *30% Club: About us*. https://30percentclub.org/
Thomas, L. D., & Autio, E. (2019). Innovation ecosystems. *SSRN*. https://dx.doi.org/10.2139/ssrn.3476925
Thomas, V. J., & Maine, E. (2019). Market entry strategies for electric vehicle start-ups in the automotive industry – Lessons from Tesla Motors. *Journal of Cleaner Production, 235,* 653–663. https://doi.org/10.1016/j.jclepro.2019.06.284
Ticoll, D. (2020). Skilling Canadians for leadership in the AI economy. *Innovation Policy Lab*. https://munkschool.utoronto.ca/media/2626/download?inline=/download
Tompa, E., Samosh, D., & Boucher, N. (2020). Skills Gaps, Underemployment, and Equity of Labour-market Opportunities for Persons with Disabilities in Canada. Future Skills Centre. https://fsc-ccf.ca/wp-content/uploads/2020/01/SkillsGap-Disabilities-PPF-JAN2020.pdf
Tonoyan, V., & Boudreaux, C. (2023). Gender Diversity in Ownership and Firm Innovativeness in Emerging Markets. The Mediating Roles of R&D Investments and External Capital. *ArXiv*. https://arxiv.org/abs/2301.01127

3M Canada. (2023, October 24). From words to action: how Canadian businesses can improve STEM equity for under-represented communities. https://news.3mcanada.ca/From-words-to-action-how-Canadian-businesses-can-improve-STEM-equity-for-under-represented-communities
Tu, L. (2024). A new era of EDI work in a turbulent time. *Monitor on Psychology, 55*(8), 24. https://www.apa.org/monitor/2024/11/edi-approach-political-backlash
Turner, S. L., McWhirter, E. H., Lee, H., Mason-Chagil, G., Smith, S., Jacobs, S. C., & Jackson, A. P. (2022). Barriers to STEM efficacy and outcome expectations among Native American college students. *The Counseling Psychologist, 50*(7), 981-1008. https://doi.org/10.1177/00110000221108454
United Nations (n.d.). The 17 Sustainable Development Goals. https://sdgs.un.org/goals
United Nations Department of Economic and Social Affairs. (2019). The Global Pilot Programme on STI for SDGs Roadmaps. https://sdgs.un.org/universal/work-stream-9-sti-policy-frameworks-action-plan-and-roadmaps-32671
United Nations Economic Commission for Europe. (2023). ISO Gender Action Plan repository submission. United Nations. https://unece.org/sites/default/files/2023-12/ISO-GAP_repository_submission.pdf?utm
University Affairs (2025, January 23). Rethinking the role of social sciences and humanities to help drive innovation and productivity. https://universityaffairs.ca/news/rethinking-the-role-of-social-sciences-and-humanities-to-help-drive-innovation-and-productivity/
University of Calgary. (2021). Canada should support diversity in STEM to encourage innovative research. https://ucalgary.ca/news/canada-should-support-diversity-stem-encourage-innovative-research
University of Waterloo. (n.d.). Research and commercialization engagement: Equity, Diversity, and Inclusion (EDI). https://uwaterloo.ca/research/about-research/research-equity-and-inclusion/research-and-commercialization-engagement
Valkokari, K. (2015). Business, innovation, and knowledge ecosystems: How they differ and how to survive and thrive within them. *Technology Innovation Management Review, 5*(8): 17–24. https://doi.org/10.22215/timreview/919.
Vanella, J. (2023). The vehicle safety standard bias: How male-based crash testing leaves female drivers in the backseat. *Policy Perspectives*, 30. https://doi.org/10.4079/pp.v30i0.14
Varsik, S. and L. Vosberg (2024), “The potential impact of Artificial Intelligence on equity and inclusion in education”, OECD Artificial Intelligence Papers, No. 23, OECD Publishing, Paris, https://doi.org/10.1787/15df715b-en.
Vazquez-Brust, D. A., Sarkis, J., & Cordeiro, J. J. (2013). Collaboration for Sustainability and Innovation in the Global South: A Cross-Border, Multi-stakeholder perspective. In *Greening of industry networks studies* (pp. 1–23). https://doi.org/10.1007/978-94-007-7633-3_1
Vedres, B., & Vásárhelyi, O. (2022). *Inclusion unlocks the creative potential of gender diversity in teams.* Laboratory for Networks, Technology and Innovation, Corvinus Institute for Advanced Studies, Corvinus University of Budapest. https://doi.org/10.48550/arXiv.2204.08505
Von Hippel, E. (1998). The sources of innovation. *Oxford University Press*.
Wall, K. (2019). *Insights on Canadian Society–Persistence and representation of women in STEM programs.* Statistics Canada. https://www150.statcan.gc.ca/n1/pub/75-006-x/2019001/article/00006-eng.htm
Wang, Z., & Yu, L. (2019). *Are firms with female CEOs more environmentally friendly?*. SSRN. http://dx.doi. org/10.2139/ssrn.3359180
Whitford, A. (2022). Understanding and addressing gender stereotypes with elementary children: The promise of an integrated approach. *Theory & Research in Social Education, 51*(2), 264–295. https://doi.org/10.1080/00933104.2022.2140091
Williams, A., & Saunders, C. (n.d.). *2019/2020 GEM Western Canada Youth Report. Global Entrepreneurship Monitor.* https://www.gemconsortium.org/file/open?fileId=50594
Wilson, S. (2020). *Research is ceremony: Indigenous research methods*. Fernwood Publishing.
Witze, A. (2015). Does innovation always come from science? *Nature, 527*(7576), 11. https://doi.org/10.1038/527011f
Woetzel, J., Madgavkar, A., Ellingrud, K., Labaye, E., Devillard, S., Kutcher, E., Manyika, J., Dobbs, R. & Krishnan, M. (2020). *How advancing women's equality can add $12 trillion to global growth*. McKinsey & Company. https://www.mckinsey.com/featured-insights/employment-and-growth/how-advancing-womens-equality-canadd-12-trillion-to-global-growth
Women and Gender Equality Canada. (n.d.). *Inclusive STEM: Towards an equitable future.* Government of Canada. https://www.canada.ca/en/women-gender-equality/funding/equality-action/inclusive-stem-future.html
Women and Gender Equality Canada. (2024, February 22). *Government of Canada announces funding for women entrepreneurs to create a more equitable digital economy*. https://www.canada.ca/en/women-gender-equality/news/2024/02/government-of-canada-announces-funding-for-women-entrepreneurs-to-create-a-more-equitable-digital-economy.html
Women Entrepreneurship Knowledge Hub. (2021, May 28). *Supports for 2SLGBTQ+ entrepreneurs across Canada.* https://wekh.ca/supports-for-2slgbtq-entrepreneurs/#:~:text=New%202SLGBTQ%2B%20entrepreneurs%20are%20not,%2B%2Downed%20businesses%20in%20Canada
Women Entrepreneurship Knowledge Hub. (2022). The state of women's entrepreneurship in Canada 2022. https://wekh.ca/wp- content/uploads/2022/03/WEKH_State_of_Womens_Entrepreneurship_in_Canada_2022-1.pdf.
Women Entrepreneurship Knowledge Hub. (2024). The state of women's entrepreneurship in Canada 2024. https://wekh.ca/wp-content/uploads/2024/04/WEKH_The-State-of-Womens-Entrepreneurship-in-Canada-2024.pdf

Women Tech Network. (2023). What are the key challenges facing women in tech leadership and how can we overcome them? https://www.womentech.net/en-ca/how-to/what-are-key-challenges-facing-women-in-tech-leadership-and-how-can-we-overcome-them
Women's Enterprise Centre. (2020). Impact of the COVID-19 pandemic on women entrepreneurs. https://www.ourcommons.ca/Content/Committee/431/FEWO/Brief/BR10835990/br-external/WomensEnterpriseCentre-e.pdf
Women's Enterprise Organizations of Canada (WEOC). (n.d.). *WEOC National loan program.* https://weoc.ca/loan-program/
Wong, K. (2024, March 25). *Diversity and inclusion in the workplace: Benefits and challenges*. Achievers. https://www.achievers.com/blog/diversity-and-inclusion/
World Economic Forum. (2014). Entrepreneurial ecosystems around the globe and early-stage company growth dynamics. World Economic Forum. (n.d.). Innovation. https://intelligence.weforum.org/topics/a1Gb0000000LrSOEA0
World Economic Forum. (2023). Women entrepreneurs in frontier markets: A $1 trillion opportunity. https://www.weforum.org/stories/2023/06/women-entrepreneurs-frontier-markets-opportunity/
World Economic Forum (2024). S*haping an inclusive global economy by scaling impactful corporate DEI initiatives*. https://www.weforum.org/impact/shaping-an-inclusive-global-economy-by-scaling-impactful-corporate-dei-initiatives/
World Intellectual Property Organization. (2023). WIPO Intellectual property (IP) and gender action plan the role of IP in support of women and girls. https://www.wipo.int/edocs/pubdocs/en/wipo-pub-rn2023-1-en-wipo-intellectual-property-ip-and-gender-action-plan-the-role-of-ip-in-support-of-women-and-girls.pdf
World Intellectual Property Organization. (2024). Appendix I - Conceptual and measurement framework of the Global Innovation Index. In Global Innovation Index 2024. https://www.wipo.int/web-publications/global-innovation-index-2024/en/appendix-i-conceptual-and-measurement-framework-of-the-global-innovation-index.html
World Intellectual Property Organization. (2024). Special theme 2024: Unlocking the promise of social entrepreneurship. *Global Innovation Index 2024*. https://www.wipo.int/web-publications/global-innovation-index-2024/en/special-theme-2024-unlocking-the-promise-of-social-entrepreneurship.html
World Intellectual Property Organization. (n.d.). *Intellectual property, gender and diversity.* https://www.wipo.int/web/gender
Woronkowicz, J. (2021). Arts, entrepreneurship, and innovation. *Journal of Cultural Economics, 45*(4), 519-526. https://doi.org/10.1007/s10824-021-09432-5
Wurth, B., Stam, E., & Spigel, B. (2022). Toward an entrepreneurial ecosystem research program. E*ntrepreneurship Theory and Practice, 46*(3), 729-778. https://doi.org/10.1177/1042258721998948
Xena (2022). *The Rise Of Femtech In 2022: Where are we now?.* https://wearexena.com/the-rise-of-femtech-where-are-we-now/#:~:text=92%25%20of%20the%20200%20femtech,see%20where%20the%20problem%20lies.
Yamamura, S. & Lassalle, P. (2024). Intersectional entrepreneurship: the burden of contextual embeddedness beyond the business. International *Journal of Entrepreneurial Behavior & Research*, Vol. ahead-of-print. https://doi.org/10.1108/IJEBR-12-2022-1117
Yang, S., Kher, R., & Newbert, S. L. (2020). What signals matter for social startups? It depends: The influence of gender role congruity on social impact accelerator selection decisions. *Journal of Business Venturing, 35*(2), 105932. https://doi.org/10.1016/j.jbusvent.2019.03.001
Yang, Y., Tian, T. Y., Woodruff, T. K., Jones, B. F., & Uzzi, B. (2022). Gender-diverse teams produce more novel and higher-impact scientific ideas. *Proceedings of the National Academy of Sciences, 119*(36), e2200841119. https://www.pnas.org/doi/pdf/10.1073/pnas.2200841119
Youtie, J., Ward, R., Shapira, P., Schillo, R. S., & Louise Earl, E. (2021). Exploring new approaches to understanding innovation ecosystems. *Technology Analysis & Strategic Management, 35*(3), 255–269. https://doi.org/10.1080/09537325.2021.1972965
Zachariah, J., & Malli, N. (2021). *The Nova Scotia inclusive innovation monitor*. Brookfield Institute for Innovation + Entrepreneurship and Organization for Nova Scotia Innovation Driven Entrepreneurship. https://static1.squarespace.com/static/5cfe9d443d69bb0001009d11/t/60a3dd90bcf9404bd63e5c5e/1621351825974/NovaScotiaInclusiveInnovationMonitor.pdf
Zenger, J & Folkman, J,. (2020). Research: Women are better leaders during a crisis. *Harvard Business Review*.
Zhao W., Wang A., Chen Y., Liu W. (2021). Investigating inclusive entrepreneurial ecosystem through the lens of bottom of the pyramid (BOP) theory: Case study of Taobao village in China. *Chinese Management Studies, 15*(3), 613–640. https://doi.org/10.1108/CMS-05-2020-0210
Zheng, H., Li, W., & Wang, D. (2022). *Expertise diversity of teams predicts originality and long-term impact in science and technology.* https://doi.org/10.48550/arXiv.2210.04422
Zhou, S., Xu, X., & Liu, F. (2024). Knowledge spillovers and integrated circuit innovation ecosystem resilience: Evidence from China. *Systems, 12*(10), 441. https://doi.org/10.3390/systems12100441
Zider, B. (1998). *How venture capital works*. Harvard Business Review. https://hbr.org/1998/11/how-venture-capital-works
Zuzul, T., & Tripsas, M. (2019). Start-up inertia versus flexibility: The role of founder identity in a nascent industry. *Administrative Science Quarterly, 65*(2), 395–433. https://doi.org/10.1177/00018392198434