Pre-Budget Consultation to the Standing Committee on Finance (FINA) in Advance of Budget 2022

Submitted by: Evidence for Democracy

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Recommendation 1: That the government commit funds to develop a National Science Strategy based on the pillars of investment, infrastructure and information.

Introduction

Science often unfolds far from the public eye. Scientific advances are made quietly over many years and decades, across research labs and through remote fieldwork. It is only on rare occasions, like the moon landing or the completion of the human genome project, that matters of science capture the imagination and widespread attention of the public.

But the outbreak of the novel coronavirus put science in the global spotlight like never before — science went mainstream. From immunology, virology and epidemiology, to genome sequencing and mRNA vaccines, the solutions delivered by science have unfolded at a pace unmatched by nearly any other tool at our disposal. This problem-solving capacity should not be tucked away for the next crisis, but deliberately deployed as an approach to tackling our biggest challenges.

Canadian science has been no exception throughout the public health crisis. Organizations like VIDO-InterVac, Genome Canada, the Canadian Institutes for Health Research (CIHR)[1], and post-secondary institutions across the country responded quickly thanks to decades of thoughtful investments. Canada has a science ecosystem of considerable strength and talent that trains world-class scientists, attracts ambitious international talent, and punches above its weight in research. When given a mission, Canadian science delivers.

But investing in science is simply a good first step. Canada lacks an overarching strategy to guide the government's efforts to connect research to long-term innovation objectives and major policy challenges. Without a strategy, Canadian science will remain unable to lock eyes on a clear picture of why investments go where they go, where the gaps are, where science is heading, and to what ends. If Canada is to unlock the full potential of its ever-growing knowledge assets and talent capacity, then it is time for Canadian science to move towards clear goals.

To achieve this, Evidence for Democracy (E4D) presents one recommendation as part of the 2022 Federal Budget consultation: that the government commit funds to develop a National Science Strategy based on the pillars of investment, infrastructure and information.

A pan-Canadian strategy can connect the science enterprise to where it is needed most, similar to what has unfolded in the pandemic. A goal was identified (defeat the SARS-CoV-2 virus), and the science and innovation ecosystem rallied to deliver solutions, including vaccines, masking, therapeutics, testing and tracing technologies, and more. A similar challenge-driven approach could be used to address a variety of issues. This model is already being used in the European Union to purposefully converge resources on pressing policy and innovation challenges.[2]

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[1] https://pm.gc.ca/en/news/news-releases/2020/04/23/prime-minister-announces-new-support-covid-19-medical-research-and

[2] https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/missions-horizon-europe_en

Recommendation 1:

Commit funds to develop a National Science Strategy based on the pillars of *investment, infrastructure and information.*

As part of Budget 2022, E4D recommends that funds be earmarked for the development of a National Science Strategy. A pan-Canadian strategy can provide the measurable guideposts the science enterprise needs to deliver impactful solutions to Canada's long-term innovation and economic objectives. A strategy can define what problems we are trying to solve and provide a roadmap to getting us there.

E4D recommends that such a strategy should pivot on three pillars: investment, infrastructure and information, elaborated below. These broad categories reinforce some of the recommendations made in the 2017 Fundamental Science Review (FSR)[3], and by several other science and research organizations in the years since.

E4D notes that while the FSR was comprehensive, given its focus on fundamental science, it was not inclusive of the entire Canadian science ecosystem, such as applied and government science. A national strategy must include the entire spectrum of science and research stakeholders.

1) ***Investment:* clear targets for science and research funding**

Canada has a persistent challenge when it comes to funding science. Defined investment targets will be critical to a successful national strategy. When the Government of Canada commissioned the FSR in 2017, it triggered an overdue increase to fundamental science, alongside several other key recommendations and supports. While the landmark investment of more than $1.7 billion in Budget 2018 and the follow-up commitments in Budget 2019 were necessary, they have not sufficiently addressed Canada's lagging performance in science investments. Moreover, the FSR has never been fully implemented, and the consequences of this have been further compounded by the dramatic shifts in the global science landscape of the past 18 months.

Canada consistently ranks sixth relative to its G7 allies in its gross domestic spending on research and development (R&D). More worrying is the fact that Canada is the only G7 country to demonstrate a continuous downward trend in R&D investments in the last two decades.[4] Having only once peaked at over 2% in 2001, Canada's spending on R&D as a portion of its GDP now hovers around 1.5%.[5]

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[3] The 2017 FSR called on the federal government to improve fundamental research in Canada and was met with great support from scientists across the country. Led by former Minister of Science, Kirsty Duncan, it was meant to ensure that Canadian science was robustly supported for maximum value to Canada.

[4] OECD (2021), Gross domestic spending on R&D (indicator). doi: 10.1787/d8b068b4-en (Accessed on 05 August 2021)

[5] OECD (2021), Gross domestic spending on R&D (indicator). doi: 10.1787/d8b068b4-en (Accessed on 05 August 2021)

Meanwhile, other G7 countries are using this moment to reinvigorate their investments in science. The United States recently indicated a commitment to return to 2% with regards to R&D expenditures as a portion of GDP, while Germany has set an ambitious target to reach 3.5% by 2025.[6] Without a meaningful increase to gross domestic spending on R&D, Canada will continue to struggle in its innovation performance and will no longer be able to attract and retain the talent to remain competitive in the global knowledge economy.

The investment pillar should include clearly defined targets to increase R&D expenditures as a percentage of GDP; for example, a goal to increase to 2% of GDP within 5 years, and to 3% within 10 years. This pillar should also be clear about how the government plans to strike a balance between increases to fundamental science and targeted investments in potentially high-value areas to Canada, whether that be artificial intelligence, genomics, quantum technologies or other emerging areas poised to revolutionize our world.

2) ***Infrastructure:* science advice and capacity in government**

Science does not speak for itself. Bringing the best available evidence to bear on the matters of the day requires the right systems and resources to be in place. The pandemic has brought forth a remarkable cast of scientific experts from across the Canadian federation who have demonstrated great skill in deciphering complex information under an ever-changing evidence base. These roles can assist both the public service and elected representatives in understanding the limitations of science and interpreting scientific uncertainty. Creating infrastructure to effectively interpret and use evidence will become increasingly important as governments navigate policy decisions to mitigate issues that have heavy scientific dimensions, like antimicrobial resistance and future pandemics.

In 2017, the government implemented a Chief Science Advisor (CSA) to provide science advice to the Prime Minister, ensure scientists can speak freely about their work, and support evidence-informed policy. While the office was renewed for a second term in September 2020, it is still not protected to withstand changes in government. Moreover and despite extraordinary strain on the relationship between science and government in the past 18 months, the mandate of the CSA has not yet been updated to reflect the changing environment.

The infrastructure pillar should include plans to formalize science advice within government, ensuring that it remains a core element that all future governments can turn to for guidance. **This could include enshrining the CSA position through legislation, expanding the capacity of the Departmental Science Advisors network, and routinely taking stock of science capacity within government, particularly in science-based departments and agencies.**

This pillar should also indicate plans to better coordinate science advice across the Canadian federation. With provinces having jurisdiction in highly consequential policy domains, such as

6 https://www.hilltimes.com/2021/05/17/feds-risk-falling-behind-on-science-investment-says-top-doc-policy-experts-as-u-s-u-k-germany-forging-ahead/297655

healthcare, the environment and natural resources, the pandemic has made it clear that advancing Canada-wide policy agendas will require greater synergy across the federation. It should be noted that the 2017 FSR made recommendations to improve intra-governmental coordination of science advice and other aspects related to pan-Canadian coordination of science.[7]

3) ***Information:*** **evidence-informed policy for equity and prosperity**

Data matters for many reasons. It draws out our blind spots and improves our chances of making better, more equitable, decisions. As well, economic prosperity will increasingly rely on a nation's ability to collect, manage and derive value from large national datasets. Comprehensive data strategies must be a core tenet of evidence-informed policy decisions to help ensure governments understand the diverse needs of their citizens and drive economic growth.

As part of the information pillar, the investments in data indicated in Budget 2021 are promising, and should be realized to their full potential. These commitments ranged from increased investments in Statistics Canada, to a First Nations Data Governance Strategy, to a federal Data Commissioner.[8] Routine plans to revise, evaluate and expand these commitments should also be considered to make sure they are working.

Similarly, this pillar should include plans for comprehensive data strategies to be implemented across the science ecosystem, from the federal granting councils to research organizations and institutions receiving public funds. Many of these data strategies exist and are scattered across the ecosystem — a National Science Strategy could outline a coherent plan to link existing strategies and connect them to government commitments to evidence-informed policy.

[7] https://www.hilltimes.com/2018/10/17/time-action-neglected-naylor-report-advice/172583

[8] https://evidencefordemocracy.ca/en/content/budget-2021-science-underpins-targeted-investments-drive-equitable-recovery-and-long-term

Conclusion

Despite chronic underfunding, Canada's science ecosystem delivered above and beyond during one of the most critical times for us as a nation. But now is not the time to rest on our laurels. Canada urgently needs a coherent and unifying National Science Strategy as it recovers from the pandemic and charts its direction for the years ahead.

The world is only beginning to awaken to the staggering scientific breakthroughs of our time. Yet, while science has never been more advanced and our capabilities to collect and derive value from vast amounts of data are truly unsurpassed, humanity is buckling under the pressure of overwhelming threats like climate change, misinformation and unchecked inequality. Future proofing our country and economy requires a bolder approach to science to absorb the shocks of the coming decades.

Canada needs science more than ever. Let's work together to build strong science, strong democracy, and a stronger future.

Who we are

Evidence for Democracy is Canada's leading non-partisan, not-for-profit organization promoting the transparent use of evidence in government decision-making in Canada. Through research, education and issue campaigns, we engage and empower the science community while cultivating public and political demand for evidence-informed decision-making.

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