Summary of the Evaluation of Innovation, Science and Economic Development (ISED) Canada funding to CIFAR

- Draft -

Audit and Evaluation Branch
Senior Management Committee – April 2022

CIFAR is a global not-for-profit organization that focuses on increasing Canadian research capacity in areas of importance to Canada, and strengthen the Canadian research environment.

Background: CIFAR was established in 1982 as an independent institute of advanced study, focused on delivering research excellence and impact. CIFAR also delivers the federal government's Pan-Canadian Artificial Intelligence Strategy (PCAIS). The Strategy brings together and enhances Canada's capacity in artificial intelligence (AI) research and training by building on and enhancing existing capacity.

Three areas were examined in the evaluation using five data collection methods, covering the period from April 1, 2016 to March 31, 2021 as required under the *Financial Administration Act*.

Relevance: To what extent is CIFAR addressing a unique and continued need in Canada's research environment?

Performance: To what extent is CIFAR contributing to:

- Advancing interdisciplinary knowledge creation?
- Supporting Long-Term Growth of the Next Generation of Researchers?
- Driving Societal Impact through Knowledge Mobilization?

Efficiency: To what extent is the CIFAR funding model an efficient approach in strengthening the Canadian research environment?

Data Collection Methods

- Literature and Document Review
- Online Survey
- Performance, Financial and Administrative Data Review
- Virtual Interviews
- Case Studies

Three findings presented the relevance and need for supporting fundamental research and the complementarity of organizations, such as CIFAR in Canada's research environment.

Finding 1 (Core): There is a continued need for the government of Canada to support fundamental research to advance innovation and provide social and economic benefits to Canada. CIFAR addresses this need by convening top researchers from across disciplines and around the world, and creating the conditions that result in successful collaborations.

Finding 2 (PCAIS): The PCAIS addresses the need to support AI research in Canada by enhancing Canada's position as a world leader in AI. There is a continued need for the government of Canada to support AI research for Canada to maintain its leadership and ability to compete globally.

Finding 3 (Core and PCAIS): Support for CIFAR and the PCAIS contributes to the government's efforts to invest in science and research, and complements other investments in the research ecosystem. The pandemic further highlighted the importance of a strong, collaborative research ecosystem.

Nine findings demonstrated CIFAR and the PCAIS effectiveness in advancing interdisciplinary knowledge creation, supporting long-term growth of the next generation of researchers and driving societal impact through knowledge mobilization.

Finding 4 (Core): CIFAR has contributed to advancing interdisciplinary knowledge creation through the identification and selection of research programs. CIFAR funding was instrumental and helped secure additional funding from other sources. CIFAR supported distinguished researchers and helped improve coordination in Canada's established research strengths.

Finding 5 (Core and PCAIS): CIFAR has helped increase collaboration among researchers domestically and internationally, through its Core research programs and associated activities. Through the PCAIS, CIFAR has also helped advance interdisciplinary and national collaboration, with the national AI Institutes (Amii, Vector, Mila) being key to bringing together researchers from academia, industry, and other sectors.

Finding 6 (Core): CIFAR Core has contributed to supporting the development of the next generation of researchers through the Global Scholars program, the participation of students in various summer/winter schools, and the integration of students into research program meetings.

Finding 7 (PCAIS): The PCAIS has supported the growth of the next generation of researchers through the attraction and retention of CCAI Chairs, who are in turn attracting students, and teaching the next generation of AI researchers at the national AI Institutes and through AI training programs.

Finding 8 (Core and PCAIS - linked to recommendation 2): Interview and survey respondents generally agreed that CIFAR and the PCAIS are effective at supporting skill and knowledge development of HQP, and support an equitable, diverse and inclusive group of HQP. Opportunities for improvement included more support at the post-doctoral level, further developing the EDI of the talent pipeline by engaging more students at the secondary and undergraduate level, and to ensure EDI data is consistently collected.

Finding 9 (Core and PCAIS): CIFAR's flexibility and agility allowed them to transition some of their activities to help support the pandemic response. The shift to a virtual setting also provided opportunities to increase participation at events. Additionally, the pandemic highlighted opportunities for AI applications to support public health.

Finding 10 (Core and PCAIS - linked to recommendation 1): Through its knowledge mobilization activities and publications, CIFAR has been successful at connecting the outcomes of its Core research programs with leaders, academics and to some extent, the general public. Data quality issues were however noted with the self-reported input, including high values and double-counting.

Finding 11 (PCAIS): The PCAIS has been successful at mobilizing knowledge to support the development of responsible AI. Knowledge dissemination activities have also been effective in sharing the outcomes of AI research more broadly, resulting in an increase in programs and funding to support the deployment of AI technologies across various sectors and industries.

Finding 12 (Core and PCAIS): Evidence shows that CIFAR and the PCAIS have contributed to public policy changes, influenced university curriculum and created start-up companies and commercial products.

Three findings highlighted the extent to which the CIFAR and the PCAIS funding model are an efficient approach in strengthening the Canadian research environment.

Finding 13 (Core and PCAIS): The CIFAR funding model is efficient. CIFAR was noted as responsive, provided flexibility for how funding is utilized and allowed research to evolve. Through the PCAIS, CIFAR has also helped advance national coordination among the national AI Institutes.

Finding 14 (Core): CIFAR administrative costs have decreased compared to five years prior. Administrative costs for CIFAR were generally lower relative to the comparators identified. Funding from ISED has helped leverage additional investments. For CIFAR, financing from other sources fluctuated during the evaluation, with some declines in provincial support.

Finding 15 (Core and PCAIS - linked to recommendation 2): While CIFAR has taken some concrete actions in order to integrate equity, diversity and inclusion into its organizational structure and the delivery of its programs, the need remains to provide more opportunities for under-represented groups within the research programs. Opportunities to improve collection of EDI data should also be explored.

Two recommendations were produced in the evaluation, stemming from the assessment of performance and efficiency, and supported by multiple lines of evidence.

Performance

Recommendation 1: ISED's SRS and CIFAR should explore opportunities to improve the rigour of performance measurement data for publications. This could include adding quality assurance review to address any abnormal values, and also exploring the use of external data to avoid double-counting joint publications.

Efficiency

Recommendation 2: ISED's SRS should work with CIFAR to continue its efforts to integrate EDI within the organization and the delivery of its programs. Particular emphasis should be placed on providing more opportunities for underrepresented groups within the research programs and ensuring consistent collection of EDI data for researchers and HQP.