2023 Report on results
An annual summary of project outputs and outcomes
November 2023
2023 Report on results

The purpose of the report on results is to provide a summary of the outputs and outcomes achieved through research infrastructure funded by the Canada Foundation for Innovation (CFI) as they relate to the overall objectives of the CFI.

This report presents a summary of information provided through annual project progress reports (PPRs). The PPR is an online questionnaire which is completed by the researcher leading a CFI-funded project and submitted by the host institution after the research infrastructure becomes operational. Institutions are required to submit a PPR for each funded project by June 30 each year, for four or five years depending on the award value.

The information considered in this report reflects performance reported from April 1, 2022 to March 31, 2023 only. Data is self-reported by researchers and submitted by funded universities, colleges, research hospitals and non-profit research organizations, and has not been independently verified by the CFI.

Consult Appendix 1 – Composition of the 2023 project progress report sample for more information.
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# About the Canada Foundation for Innovation

With a bold, future-looking mandate, the CFI equips researchers to be global leaders in their fields and to respond to emerging challenges. Our investments in state-of-the-art tools, instruments and facilities at universities, colleges, research hospitals and non-profit research institutions underpin both curiosity- and mission-driven research that cuts across disciplines and bridges all sectors. The research infrastructure we fund mobilizes knowledge, spurs innovation and commercialization, and empowers the talented minds of a new generation.

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Attraction and retention of world-class researchers

Researcher attraction

Among the 214 newly recruited researchers leading CFI-funded projects, 98% indicated that CFI-funded research infrastructure positively influenced their decision to join their institution.

Just over 50% of new recruits (of Canadian or non-Canadian citizenship) were in foreign countries at the time of their hiring, suggesting that CFI-funded research infrastructure contributed to attracting international talent and internationally trained Canadian talent.

Those new recruits who were already in Canada (49%) came from different sectors but were predominantly from academia.

<table>
<thead>
<tr>
<th>SECTORS</th>
<th>CITIZENSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>University/college/research hospital</td>
<td>Foreign</td>
</tr>
<tr>
<td>94 (89%)</td>
<td>50 (46%)</td>
</tr>
<tr>
<td>Other public</td>
<td>Private</td>
</tr>
<tr>
<td>6 (6%)</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>Private</td>
<td>Non-profit</td>
</tr>
<tr>
<td>4 (4%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Other public</td>
<td>Foreign</td>
</tr>
<tr>
<td>6 (6%)</td>
<td>50 (46%)</td>
</tr>
</tbody>
</table>

Canada 105 (49%)

Foreign countries 109 (51%)
Researcher retention

94% of researchers leading CFI-funded projects indicated that CFI-funded research infrastructure was important in their decision to remain at their institution. Funding for research infrastructure helped retain researchers from all fields of research.
Development of highly qualified personnel

Trainees using research infrastructure

96% of researchers leading CFI-funded projects reported that CFI-funded research infrastructure was a key resource for the next generation of researchers.

31,864 postdoctoral fellows and higher education students had the opportunity to expand their research skills using CFI-funded research infrastructure. Of those, 47% used the research infrastructure for the first time in 2023.

- Postdoctoral fellows: 1,653 first-time users, 2,788 repeat users
- Doctoral students: 3,808 first-time users, 7,720 repeat users
- Master’s students: 3,623 first-time users, 4,146 repeat users
- Undergraduate students: 5,973 first-time users, 2,153 repeat users
Quality of training environment

92% of researchers leading CFI-funded projects credited their CFI-funded research infrastructure with having a high or very high impact on the quality of the training environment. The data is relatively consistent across all fields of research except social sciences, and humanities and the arts, where ratings are lower.
Highly qualified personnel employment

A total of 2,588 postdoctoral fellows and graduate students using the research infrastructure completed their training and moved into the workforce. Among them, 83% (2,158) secured employment in Canada, the majority (65%) of whom joined the private sector.
Capacity for world-class research

Operation and maintenance

88% of researchers leading CFI-funded projects reported that they had both adequate financial and human resources for the operation and maintenance of their CFI-funded research infrastructure. Diverse funding sources, including research contracts and user fees, contribute to the sustainability of the research infrastructure. Grants or awards from the federal government were the most common source of funding used.

![Bar chart showing source of funding for CFI projects]

- Grants or awards
- Revenues

Source of funding:
- CFI (Infrastructure Operating Fund)
- Institutional funds
- Federal government
- Provincial government
- Foreign government
- Municipal government
- Research contracts
- User/service fees
- Consulting
Research infrastructure quality and useful life

The quality of CFI-funded research infrastructure was highly rated overall, with researchers reporting that 88% of their highly specialized research equipment is state-of-the-art. Highly specialized research equipment was reported by researchers leading CFI-funded projects as having the highest level of quality (still being state-of-the-art) with a remaining useful life of over eight years, on average.
Research infrastructure use

84% of researchers leading CFI-funded projects reported that their CFI-funded research infrastructure was used to maximum capacity. Overall, 21,246 researchers (excluding students, postdoctoral fellows and technical and professional personnel) advanced their research using CFI-funded research infrastructure.

The top five countries where the largest number of international research infrastructure users were from are Switzerland, the United States, France, the United Kingdom and Italy.
Sharing of research results

Conference, symposium and workshop presentations are the most frequent type of research output reported, closely followed by peer-reviewed publications.
Productive networks and collaboration

Productive collaborations

Researchers have made use of CFI-funded research infrastructure to enable external research collaborations that resulted in traditional academic activities and outputs. The most common is conference presentations, with 6,034 reported by 649 researchers leading CFI-funded projects. Among researchers leading CFI-funded projects that indicated external collaborations, 22% reported engaging in all four types, suggesting that CFI-funded research infrastructure enables broad and varied collaboration.
Research agreements

CFI-funded research infrastructure facilitated new formal collaborative research agreements in 32% of projects, for a total of 4,047 agreements.

The private sector was the sector most often identified for both consultancies and research contracts while the academic sector was most frequently reported for collaborative research.
Economic growth and job creation

From research to innovation

CFI-funded research infrastructure has contributed to the development of new intellectual property and the creation of new companies. 133 researchers leading CFI-funded projects reported at least one of the six types of research outcomes below.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisional patents</td>
<td>183</td>
</tr>
<tr>
<td>Patents</td>
<td>79</td>
</tr>
<tr>
<td>Projects with licensing agreements</td>
<td>27</td>
</tr>
<tr>
<td>Spin-off companies</td>
<td>36</td>
</tr>
<tr>
<td>Copyrights/trademarks</td>
<td>2</td>
</tr>
<tr>
<td>Industrial designs</td>
<td>0</td>
</tr>
</tbody>
</table>
New jobs

27% of researchers leading CFI-funded projects reported one or more jobs created due to CFI-funded research infrastructure.

Over half of all jobs created were within the host institutions. 80% of the 631 jobs created outside the institution were in the private sector.
Benefits to Canadians

A range of benefits

Close to half (48%) of researchers leading CFI-funded projects reported at least one type of benefit, highlighting the role of CFI-funded research infrastructure in enabling research that produces outcomes for Canadians.

Among the benefits outlined:

- Advancement in side-effect free and non-addictive opioid to treat pain from gut inflammation.
- Innovative electrical stimulation device to improve rehabilitation of paralysis in stroke and quadriplegic patients.
- Prototype ergonomic device to assist in safe handling of medical needles.

(type of benefit)
Users of research outcomes

Overall, the most frequently reported user group benefiting from the research results was the private sector, followed by public and semi-public organizations and institutions. Research users varied by socioeconomic objectives of the research; for example energy projects tended to benefit the private sector most while research on environmental protection tended to benefit the federal, provincial and/or municipal governments.
Challenges

Most common factors limiting research

70% of project leaders reported one or more factors limiting the quality and impact of the research enabled by the research infrastructure. The most common factor reported was recruiting or retaining of trainees and personnel.

![Pie chart showing the percentage of projects facing different challenges.](image-url)
Appendix 1 – Composition of the 2023 project progress report sample

1,594 (96%) reports received and included in analysis

98 institutions

Projects by fund*
- Innovation Fund 9%
- JELF 86%
- Other 5%

Projects by $ awarded
- <$200K 62%
- $200K–$1M 29%
- >$1M 7%
- $4–$10M 2%
- >$20M 0.1%
- $10–$20M 0.1%

Projects by field of research
- Medical, health and life sciences 21%
- Natural sciences 49%
- Social sciences 6%
- Engineering and technology 18%
- Humanities and the arts 4%
- Agricultural and veterinary sciences 2%


John R. Evans Leaders Fund (JELF) includes projects funded through: a partnership between the Leaders Opportunity Fund and the Canada Research Chairs Program and both the unaffiliated and partnership (associated with an application for research support funding from another program).

“Other” includes projects funded through the Cyberinfrastructure Initiative – Challenge 1, the Exceptional Opportunities Fund (EOF) and the EOF COVID-19 Fund for both universities and colleges.