2013 REPORT ON RESULTS

An analysis of investments in research infrastructure
ABOUT the Canada Foundation for Innovation

Created by the Government of Canada in 1997, the Canada Foundation for Innovation (CFI) strives to build our nation’s capacity to undertake world-class research and technology development to benefit Canadians.

The CFI’s expected results are to enhance the capacity of institutions to:

- attract and retain the world’s top research talent;
- enable researchers to undertake world-class research and technology development that leads to social, economic and environmental benefits for Canada;
- support private-sector innovation and commercialization; and
- train the next generation of researchers.

Since its creation, the CFI has committed more than $6 billion in support of 8,132 projects at 141 research institutions in 68 municipalities across Canada (as of June 2013). For more information about the CFI, please visit innovation.ca.

THE REPORT ON RESULTS

The purpose of the Report on Results is to provide a summary of the outputs and outcomes achieved through CFI-funded infrastructure as they relate to the overall objectives of the CFI, based on information provided through annual Project Progress Reports (PPRs). The PPR is an online questionnaire which is completed by the project leader and submitted by the host institution. Institutions are required to submit a PPR for each funded project by June 30 each year, for up to five years after the infrastructure becomes operational. The data collected pertains only to the past year (CFI fiscal year April 1 to March 31). Data is self-reported, and not independently verified.

For information on the composition of the 2013 PPR sample, see the Appendix.

Acronyms used in the report
CFI: Canada Foundation for Innovation
PPR: Project progress report
HQP: Highly qualified personnel
PDF: Post-doctoral fellow
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Among 287 project leaders who submitted a report for the first time, 51% (146) reported that they were newly recruited to the institution. 99% of them stated that the availability of CFI-infrastructure was an important factor in their decision to join the institution.

Importance of infrastructure in decision to join the institution

Among 146 project leaders, 94% were recruited from the academic sector.
Among the 146 project leaders newly recruited to the institution, 60% were coming from outside Canada. Of those, nearly half were foreign citizens, suggesting CFI-funded infrastructure contributed to attracting international talent.
94% of project leaders reported that CFI-funded infrastructure was important in their decision to stay at their institution. This demonstrates that infrastructure plays a key role in the retention of some of Canada’s best researchers.

**Importance of infrastructure in decision to stay at institution**

- **Very important**: 67%
- **Somewhat important**: 27%
- **Not at all important**: 6%

*Attracting and retaining world-class researchers*
HQP using infrastructure

97% of project leaders reported that CFI-funded infrastructure was a key resource for trainees.

Trainees using infrastructure

26,226 post-doctoral fellows (PDFs) and higher education students had the opportunity to expand their research skills using CFI-funded infrastructure. On average, 52% of them used the infrastructure for the first time.
91% of project leaders credited their infrastructure with having a high or very high impact on the quality of the training environment.

**Impact on training**

![Bar chart showing the percentage of projects categorized by impact on training environment]

- **Very high**: 69%
- **High**: 22%
- **Medium**: 7%
- **Low**: 1%
- **Very low**: 1%

*Developing highly qualified personnel*
Highly qualified personnel who have trained on CFI-funded infrastructure support economic growth in Canada.

Employment in Canada by sector

Total: 800 (56%)
- Red = 100 PDFs
- Orange = 100 PhDs
- Yellow = 100 Masters

Total: 392 (28%)

Total: 232 (18%)

Private
University/college/research hospital
Public/non-profit

1,843 PDFs and graduate students using the infrastructure last year completed their training and moved into the workforce. Among them, a large proportion (77%) stayed in Canada, while the remaining 23% were reported as working abroad.

Developing highly qualified personnel
Operation & maintenance

84% of project leaders reported that they had both adequate financial and human resources for the operation and maintenance (O & M) of the infrastructure.

Sources of funds for O & M

Use of diverse funding sources, including research contracts and user fees, contributes to the sustainability of the infrastructure.

Technical personnel
47% of project leaders reported a total of 2,346 technical personnel who were trained for the first time last year on the use and maintenance of the infrastructure.

Capacity for world-class research
Infrastructure quality & useful life

The quality of CFI-funded infrastructure was highly rated overall, with 82% of highly specialized research equipment reported as “state-of-the-art.”

Infrastructure quality and remaining years of useful life

- **Highly specialized research equipment**: 277 out of 1,316 projects (21% obsolete, 79% remaining useful life)
- **Non-specialized or standard research equipment**: 495 out of 598 projects (11% obsolete, 89% remaining useful life)
- **Computing hardware or software**: 517 out of 602 projects (6% obsolete, 94% remaining useful life)
- **Research space**: 276 out of 364 projects (13% obsolete, 87% remaining useful life)
- **Building(s)**: 121 out of 186 projects (9% obsolete, 91% remaining useful life)

Years of remaining useful life:
- **Highly specialized research equipment**: 7.5 years
- **Non-specialized or standard research equipment**: 7.7 years
- **Computing hardware or software**: 3.4 years
- **Research space**: 14.3 years
- **Building(s)**: 19.4 years

*Capacity for world-class research*
The majority of project leaders reported full utilization of infrastructure across research sectors, suggesting that infrastructure is appropriately located.

### Level of infrastructure use by area of application

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<th>Area of Application</th>
<th>% of projects</th>
<th>Fully utilized</th>
<th>Oversubscribed</th>
<th>Underutilized</th>
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<td>Engineering (314)</td>
<td>75%</td>
<td>12%</td>
<td>13%</td>
<td></td>
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<tr>
<td>Environment (188)</td>
<td>73%</td>
<td>13%</td>
<td>14%</td>
<td></td>
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<tr>
<td>Health (877)</td>
<td>74%</td>
<td>11%</td>
<td>15%</td>
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<tr>
<td>Science (373)</td>
<td>77%</td>
<td>12%</td>
<td>11%</td>
<td></td>
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<tr>
<td>Social sciences and humanities (128)</td>
<td>80%</td>
<td>8%</td>
<td>12%</td>
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Sharing research results

As expected in an academic setting, conferences, symposiums and workshop presentations were the most frequently reported research outputs, closely followed by peer-reviewed publications.

Dissemination by area of application

### Engineering (295 projects)

- Presentations: 89%
- Peer-reviewed publication: 85%
- Book: 10%
- Research or technical report: 31%
- Reference or training tools/material: 9%
- Internet publishing: 7%

### Environment (182 projects)

- Presentations: 95%
- Peer-reviewed publication: 86%
- Book: 12%
- Research or technical report: 32%
- Reference or training tools/material: 7%
- Internet publishing: 10%

### Health (827 projects)

- Presentations: 95%
- Peer-reviewed publication: 90%
- Book: 13%
- Research or technical report: 14%
- Reference or training tools/material: 7%
- Internet publishing: 8%

### Science (349 projects)

- Presentations: 95%
- Peer-reviewed publication: 89%
- Book: 13%
- Research or technical report: 30%
- Reference or training tools/material: 8%
- Internet publishing: 11%

### Social sciences and humanities (113 projects)

- Presentations: 99%
- Peer-reviewed publication: 87%
- Book: 36%
- Research or technical report: 35%
- Reference or training tools/material: 27%
- Internet publishing: 39%

Capacity for world-class research
Advancing research

Infrastructure was used by a diverse community of public, private and non-profit sector users.

External users of infrastructure by location and sector

Users within the institution
84% of project leaders (1,574) reported at least one researcher at their institution using the infrastructure to advance their research, for a total of 8,976 internal users.

Users outside of the institution
60% of project leaders (1,137) reported at least one user from outside their institution, for a total, 21,448 external users.
Researchers have made use of infrastructure to serve collaborative research endeavours for traditional academic activities and outputs such as funding applications and publications.

69% of project leaders reported at least one type of collaboration with individuals from outside their institution. Of those, 22% of project leaders reported all four types, suggesting CFI-funded infrastructure enables broad collaboration.
Research agreements

CFI-funded infrastructure facilitated formal collaborative research agreements. Project leaders reported a total of 2,610 agreements.

Types of agreement by reporting year

Among projects that reported agreements, the proportion for each type was consistent across the reporting years. This suggests that project year has little influence on the type of agreements entered into.

Productive networks and collaborations
CFI-funded infrastructure has contributed to the development of new technologies and the creation of new companies.

165 project leaders reported that they were granted intellectual property rights as a result of research using CFI-funded infrastructure.

46 project leaders reported entering into licensing agreements based on intellectual property enabled by the CFI-funded infrastructure.

Economic growth and job creation
28% of project leaders reported one or more jobs created due to the CFI-funded infrastructure.

Just over half (58%) of all jobs created were within the host institutions. Almost half of the 743 jobs created outside the institution were in the private sector.

Economic growth and job creation
A range of benefits

46% of project leaders reported at least one type of benefit, highlighting the role of CFI-funded infrastructure in enabling research that produces outcomes for Canadians.

Types of benefits reported

The CFI and the Canadian Institutes of Health Research collaborated on a socioeconomic impact assessment of medical imaging research. This study traced the development and impact of one innovation – computed tomography perfusion.

Benefits for Canadians
Areas of impact and user groups

Areas of impact

Economic, public health, and education/training were the most frequently reported areas of impact.

User groups

Private sector/industry is the primary beneficiary of CFI-enabled research knowledge and technologies.
Challenges

The most frequently mentioned challenge by project leaders was funding/support for research operating costs.

Significant factors limiting research

Although issues related to HQP and the acquisition and updating of equipment were also identified as important challenges, 31% of project leaders reported that they had no significant limiting factors in conducting their research.
Composition of the 2013 PPR sample

2,050 expected 1,939 received 1,880 project reports from 73 institutions included in analysis

Leaders Opportunity Fund and New Opportunities Fund (LOF/NOF): LOF-under $1M; LOF-$1M to $2M; LOF-Canada Research Chairs (CRC); LOF-NSERC; Industrial Research Chairs; LOF-GHR; Programmatic Grants in Food and Health; LOF-SSHRC; and New Opportunities Fund.
Other programs: International Joint Venture Project 2005; Research Hospital Fund 2004; Research Hospital Fund - Large Scale Institutional Endeavors; and Research Hospital Fund - Regional/National Clinical Research Initiatives.