

Strategic Research, Innovation, and Commercialization Plan Summary 2014 - 2019

Background and Major Objectives

Cape Breton University was established in the mid-1970s and is a relatively young educational institution. The local community was instrumental in the origin of the institution and still has a significant impact on its programming and research interests. Many researchers are influenced by the local environment, geography, history and culture. Over the last decade, CBU has allocated significant resources to developing and expanding its research culture. CBU is a thriving educational institution with a broad and innovative array of degree, diploma and certificate programs, primarily at the undergraduate level and has gained a strong reputation for the engagement of undergraduate students in research.

The main thrust of this strategic research, innovation, and commercialization plan is to continue to develop a culture of research and scholarship and to establish priorities for the next five years, building on our current research strengths and expanding into developing areas. This will require partnering with local, regional and national industrial and private sectors in addition to the traditional government funding agencies.

Our vision is to be an outstanding undergraduate institution, with a growing portfolio of graduate programs, engaged in research and scholarly activity that has an impact locally as well as globally. As such, CBU is committed to:

- Supporting undergraduate success through research opportunities;
- Supporting graduate student research* through appropriate graduate level programs as well as partnerships with other universities;
- World-class research that is of importance locally, regionally, nationally and internationally;
- Knowledge mobilization and transfer through all modes of dissemination including publication, conference presentation, community and industry engagement, and commercialization;
- Recruiting and retaining faculty who are committed to undergraduate teaching and who will undertake active research programs;
- Promote connections and opportunities between high quality teaching and research.

Current Research Culture

The past decade has seen a significant change in research engagement and productivity. Since 2000, there has been a concerted effort to not only increase the quantity but also the quality

* Graduate student research opportunities will not be at the expense of undergraduate opportunities. Being a primarily undergraduate institution, CBU's first priority is to ensure the highest quality undergraduate experience.

of research activities. Over this period, CBU has gained a reputation for exceptional engagement of undergraduate students in research. These students are given opportunities and experiences that rival graduate experiences at many institutions. CBU is committed to building a vibrant research culture, based on the principles of academic freedom, accountability, and ethics, that is held to the highest standards of integrity.

RESEARCH FUNDING

Today, from quantity and quality perspectives, CBU's research record is impressive, especially for a primarily undergraduate institution. CBU ranked* 54th among the 91 Canadian post-secondary institutions in total research funds received and 36th in total research funds per full-time faculty member. With respect to the 19 primarily undergraduate universities, CBU ranked 7th in funding per full-time faculty member. CBU researchers have attracted more than \$10 million in external funding since 2004.

Over the last 3 years, CBU has seen a significant increase in Canada Foundation for Innovation and Nova Scotia Research and Innovation Trust funded infrastructure projects. In addition, the business and industry sponsored research has increased from nil to approximately ½ million dollars annually. This is due in part to the Canada Foundation for Innovation, and Nova Scotia Research and Innovation Trust infrastructure projects but also due to increased faculty engagement with industry and activity in the Verschuren Centre. It is expected that this will dramatically increase in the next two to five years. CBU does not have a large portion of faculty who have been successful in entrepreneurship, however, there have been a small number of highly successful initiatives. Examples are the Tompkins Institute and Health Outcomes Worldwide, resulting in more than \$54 million in sales, \$17 million in wages and 750 full time employment opportunities.

KNOWLEDGE CREATION, MOBILIZATION AND TRANSLATION

The 2013 CBU Research Report highlighted the activities around knowledge creation, mobilization and translation. CBU faculty are very active with more than 95 academic publications and 14 books published in 2012-2013. In addition, there were in excess of 230 conference presentations. CBU faculty were also actively engaged in disseminating their research through community events and the media (print, radio and television). There are also many active collaborations internal to CBU, with the local community, industry, nongovernmental organizations and government agencies. Within the comparison group identified in the annual research report, CBU ranked 7th out of 10 in academic publications/per faculty member between 2010 and 2013.

STUDENTS

CBU prides itself and has gained an excellent reputation for engagement of undergraduate students in research. In many disciplines our undergraduate students receive a research experience that rivals graduate level programs. While this naturally varies according to discipline and some disciplines lend themselves more to the involvement of undergraduates than others, CBU has made it a priority to encourage the involvement of undergraduates in research activities. These undergraduates are active members of the research teams and make a real and lasting contribution to the research being involved in all aspects of the research from developing the research questions, to active research and dissemination of the research results. Undergraduates are given the opportunity to carry out independent research and present their

findings at institutional, regional, national and international symposia. Additionally, they work with faculty on industry projects where their research directly impacts the productivity and prosperity of local, regional and national organizations. During the fiscal year ending March 2013, more than 130 undergraduate students were active members of research teams at CBU. CBU is committed to remain true to its roots and keep participation of undergraduates as an essential component of its research agenda.

Currently, CBU offers an MBA in Community Economic Development and, through a partnership with Memorial University, an MEd in Information Technology. Both of these programs have research components and have students and faculty actively engaged in cutting edge research. In addition, more than twenty CBU faculty hold adjunct appointments with various universities across Canada (from Memorial University to the University of British Columbia) and around the world. These appointments give faculty the capacity to supervise graduate students even in disciplines that do not have graduate degrees. Despite a limited array of graduate programming, in 2012-13 there were more than 65 graduate students actively carrying out research in many disciplines across the CBU campus.

COMMUNITY RESEARCH

Connection with community and engagement with research that is locally relevant but also of the highest academic standards is a cornerstone of many research centres & institutes as well as individual researchers. Action research has been practiced at CBU for many decades and has been key in the transition of the institution from a junior college to a vibrant active university.

INSTITUTIONAL SUPPORT NETWORK

A major objective of the CBU Strategic Research, Innovation and Commercialization Plan for 2014-2019 is to develop a framework to expand research and innovation. To meet this objective, several simultaneous tactics are being pursued. For example, financial and human resources are being allocated to increase involvement in research and innovation; the institution is strengthening its efforts to obtain outside funding for research; industrial and community research partnerships are being enhanced; continuous improvements are being made to research facilities; and procedures are being developed to involve students more extensively in research projects. CBU has a very progressive system of internal research grants that can be used to supplement start-up grants and external funding, and serve as seed funding to develop projects for external funding. There is a system of teaching release for research and an evergreen computer lease program that provides faculty and researchers access to computer equipment that is refreshed on a three or four-year cycle.

Established and Emerging Research Concepts and Foci

The identification of research concepts and foci should in no way interfere with a faculty member's ability to choose what to study. The aim of a concept designation is to identify areas of strength and emerging capacity and to identify areas that are likely to have significant activity in the near future thereby warranting a research chair and/or major research infrastructure. The 2011 CRC/CFI strategic research plan recognizes current and or emerging expertise in four interconnected research concepts: Cultural and Ecological Heritage, Fundamental Knowledge and Innovation, Social and Political Processes and Change, and Sustainability and Community Development. Building on these, and the changes in the research culture and expertise over the

past couple of years, the primary research concepts can be grouped according to:

- 1) Culture and Creativity
- 2) Social and Ecological Change and Adaptation
- 3) Community Economic Development
- 4) Fundamental Knowledge Creation

Each of these general concepts is multidisciplinary and presents areas of established and emerging strength. They are not independent, many research programs and researchers can identify with more than one theme and there is interconnectivity between them.

Support for research engagement in foundational research

It is of the utmost importance that even though a university needs to identify areas of focus for research strengths, that any university that wants to develop a world class research culture and scholarly engagement must also support areas of research that are outside the strategic areas. It is this broad engagement of researchers in many disciplines that is a core value of a successful university and ultimately establishes a strong research culture. Not everyone is expected to fit within the strategic areas, and in fact it would be short-sighted and undermine the long term stability and productivity of a university to have everyone focus in relatively few areas of inquiry. Academic freedom to pursue what and how research is conducted, is a fundamental principle to building a strong research culture. While a strategic plan will naturally focus time and resources on the priorities identified within the plan, it is important not to neglect the broader research community.

Innovation and Commercialization

Increasingly, the dissemination of research is being recognized as a valuable part of research activities. This dissemination includes the traditional academic publications and conference presentations, but it also includes innovations and partnerships that impact economic activities and commercialization of research outputs. Industrial and commercial activities occur in many disciplines. All too often a very narrow view of these terms is taken to mean selling out to corporate interests. This plan deliberately takes a broad definition of industry engagement and commercialization and includes community engagement through cultural and creative arts activities and does not restrict it to the scientific, engineering and manufacturing industries. In addition, while there are opportunities to conduct specialized research through research contracts with the private sector, it is extremely important to provide supports to help develop the research and scholarly activity that have potential to have a local economic impact.

PARTNERING WITH PRIVATE SECTOR

There are rich opportunities for faculty to be involved with research through private sector engagement. There are opportunities in the sciences, engineering, cultural sectors and hospitality & tourism sectors to name but a few. CBU will encourage and support faculty engagement with the private sector through the industry liaison officer. Currently, CBU has a small number of faculty that have commercialized their research while a larger number are actively engaged in

research connected to the private sector. These opportunities are quickly expanding and will play an important role in the research initiatives over the coming years.

COMMERCIALIZATION OF RESEARCH

When opportunities arise, CBU will support the commercialization of faculty research through the industry liaison office. Consistent with the collective agreements, faculty choosing to work with the Industry Liaison Officer (ILO) and CBU will be required to negotiate an agreement on the assignment of the intellectual property. The ILO will work with the faculty member to determine how best to pursue various commercial avenues such as licensing, start-up companies, spin-off companies, access to funding, etc.

Measures of Success

The success of any strategic plan has to be measured in both short and long term goals. In the short term, success of this plan will be measured by an increase in research activity and a resulting increase in funding applications. Over the long term, success will be measured through increased graduate student programs and research; recruitment and retention of outstanding researchers; increased research activity and capacity; increased external funding; increased private sector partnerships; increased commercialization, knowledge transfer and dissemination of research through publications and conference presentations; and the development of a vibrant research culture.

The key performance indicators that will provide a direct measure of success for this plan are:

- Research Funding Achieve and maintain top 3 in comparison group
- Research Dissemination Achieve and maintain top 5 in comparison group
- Industry Engagement & Commercialization at least one new start-up/spin-off
- International Development 3 major projects
- Students increased undergraduate & graduate student participation in research

Future Strategic Research Plans

As mentioned near the beginning of this document, the research concepts and foci identified in this plan do not represent the totality of research at CBU. As research programs evolve and new faculty members are hired, such existing areas, and others not yet recognized, indeed may be emphasized in future versions of the institutional research and innovation plan. In fact, it is hoped that the Strategic Research and Innovation plan will both guide and motivate the continuing development of a rich and productive research culture. The CBU Strategic Research and Innovation plan is dynamic and open to annual update as necessary with a complete re-examination every five years.