CAPE BRETON UNIVERSITY

Strategic Research Plan Summary 2011 - 2015
Prepared for the Canada Foundation for Innovation
and the Canada Research Chairs program

Background and Major Objectives

Cape Breton University is a relatively young educational institution, established in the mid 1970s. The local community was instrumental in the conception 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. Despite being young, CBU is a thriving educational institution with a broad and innovative array of degree, diploma and certificate programs, primarily at the undergraduate level.

The main thrust of this strategic research plan is to continue to develop a culture of research and scholarship. The core objective of this research plan is to build on our current research strengths and to expand into developing areas.

Today, from quantity and quality perspectives, CBU's research record is impressive. CBU ranked* 51st among the 76 Canadian post-secondary institutions in total research funds received and 46th in total research funds per full-time faculty member. East of Quebec, CBU ranked 10th in total research funds received and 8th in total research funds per full-time faculty member. With respect to the 22 primarily undergraduate universities, CBU ranked 16th in total research funding and 9th in funding per full-time faculty member. CBU had the 14th largest increase (3rd largest east of Quebec) in research funding from 2007 to 2008. CBU researchers have attracted more than $10 million in external funding since 2004.

Undergraduate Research Engagement

CBU prides itself and has gained an excellent reputation for engagement of undergraduate students in research. Students are active members of many research teams. In many disciplines our undergraduate students receive a research experience that rivals graduate level programs. CBU has made it a priority to encourage the involvement of undergraduates in research activities. Undergraduates are given the opportunity to carry out independent research and present their finding at institutional, regional, national and international symposia. During the summer of 2010, more than 60 undergraduate students were active members of research teams at CBU. To support undergraduate research, CBU has created the Student Undergraduate Research Forum (SURF), the Student Summer Lecture Series and a Student Research Newsletter giving undergraduate students the opportunity to present their original research findings to CBU faculty and staff as well as the broader community. Participation of undergraduates is an essential component of this research agenda.

Graduate Programs

Currently, CBU offers an MBA in Community Economic Development and, in partnership with Memorial University, an MEd in Information Technology. Both have research components and have students and faculty actively engaged in cutting edge research. In addition, numerous CBU faculty hold adjunct appointments with various universities across

* Data from the *CAUT Almanac of Post-Secondary Education 2010-2011*. All values are for the 2008 fiscal year.

Canada. These faculty have the capacity to supervise graduate students even in disciplines that CBU does not have graduate degrees. Despite a limited array of graduate programming, there are graduate students actively carrying out research in many disciplines across the CBU campus.

A long term goal is to expand the graduate level programs and the research concepts and foci will be the cornerstones of these programs. The research infrastructure provided through the Canada Foundation for Innovation (CFI) and the expertise of the research chairs will be key components of this development.

Established and Emerging Research Concepts and Foci

Being a primarily undergraduate institution that is just starting to develop graduate programs, it is absolutely essential that the research concepts and foci be interdisciplinary and interconnected. Individual departments are generally too small and do not have the critical mass to "go it alone". Neither does CBU have the resources to support major research and graduate programming in all disciplines at once. There has to be a gradual and incremental increase in both of research and graduate programming.

One of CBU's major goals is to be recognized and respected regionally, nationally, and internationally as an emerging university with substantial research expertise and productivity. The identification of research concepts and foci should not 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.

Over the last decade, CBU has used its Canada Research Chairs (CRC) and CFI allotment to build world class capacity in the sciences, culture & heritage and health research with a goal of building the necessary research capacity to make CBU attractive to top-notch researchers not only in these disciplines but also across the institution. The CRC and CFI awards were and continue to be the cornerstones of many of the emerging areas of expertise and research concepts and foci identified in this document.

CBU currently has a recognized 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". 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.

The relationship of the research chairs (see below) to the **Established and Emerging Research Concepts and Foci** and the interconnectivity of these areas are shown in Figure 1 of the full strategic plan. While all of the chairs fit within at least two of the concepts and foci, many of the chairs fit within three or four.

A. Cultural and Ecological Heritage

Five of the current research chairs have identified aspects of their research within *Cultural and Ecological Heritage*. Three of the planned chairs will have some aspect of their research in this area. The major programming development in this concept during the period 2011 – 2015 will be the development of an MA in Heritage.

B. Fundamental Knowledge and Innovation

All of the current research chairs have identified "Fundamental Knowledge and

Innovation" as part of the mandate of their research programs. Some aspects of the three planned chairs will also fall within this concept, making it the foundation of research activity.

C. Social and Political Processes and Change

Four of the current research chairs and three of the planned chairs have or will have activity in *Social and Political Processes and Change.* Three of the chairs are key in this area. The Viola Desmond Chair in Social Justice, the CRC in Integrative Science, and the Purdy Crawford Chair in Aboriginal Business Studies are all focused on some aspect of Social or Political processes and making constructive changes. The major programming development in this concept during the period 2011 – 2015 will be the development of an MA in Social Justice.

D. Sustainability and Community Development

Five of the current and all three of the planned chairs are active in *Sustainability and Community Development*. The activities within this concept can be divided into *Community Economic Development* and *Sustainability in Energy and the Environment*. During the period covered by this plan, a Masters level degree in either science or applied science will be developed with a focus on sustainability in energy and environment. The research chairs connected with the CSEE along with researchers in chemistry, biology, geology and engineering will be instrumental in the development and delivery of this new degree.

Research Chairs

Currently, CBU has research chairs in Integrative Science, Intangible Cultural Heritage, Molecular Spectroscopy, Marine Ecosystem Research, Mine Water Remediation and Management, Aboriginal Business Studies, and Social Justice. Chairs in Remediation Technology, Clean Energy from Coal, and Renewable Energy are planned within two years. In total, currently there are seven research chairs at CBU with plans to add three more chairs over the next year or two. The chairs and their research concepts/foci are summarized in Table 1. Generally, the research chairs fit within more than one concept and foci, frequently in three or four of them. CBU has used the CRC to seed the development of a strong research culture in those areas and others in the university. As a result, non-CRC chairs have been created and have magnified the impact of the CRC program. CBU's CRCs have a much further reach than one would expect with the direct chair allocation.

Canada Research Chairs

Currently, CBU's CRCs are fully allocated as a Tier I chair in Integrative Science, a Tier I chair in Intangible Cultural Heritage and a Tier II chair in Molecular Spectroscopy. These have been tremendously successful and the departments with a CRC have seen a large growth of research activity and have attracted other very strong researchers to CBU. In particular, the departments of chemistry, biology, and culture & heritage have several very active new researchers that have been successful in receiving CFI, NSERC, and SSHRC as well as other funding. While these departments have seen a direct impact of the CRC, there has been a ripple effect throughout the university resulting in increased research activity and other research chairs.

CBU's first CRC was a female candidate working with Aboriginal communities to integrate Indigenous knowledge with western science. Currently, the CRC at CBU are one female and two males. Gender and minority equity are a priority and all chair appointments will be an open and transparent process, with the principles of equity at the forefront. However, with such a small number of chairs, one has to realize that the distribution may fluctuate. To the best

of its ability CBU will try to maintain a 50% distribution of female CRCs.

Industrial and Other Research Chairs

As our CRC allotment is fully subscribed, the plan for the coming years is to use the CRC as a foundation to build other research chairs such as industrial and private sector chairs. This is already showing benefits in that CBU has established, through both internal allocation of resources and successful partnerships with external partners, an Industrial Research Chair in Mine Water Remediation and Management, (Christian Wolkersdorfer, Department of Engineering), a University Research Chair in Marine Ecosystem Management (Bruce Hatcher, Bras d'Or Institute & Department of Biology), the Purdy Crawford Chair in Aboriginal Business Studies (Keith Brown, Shannon School of Business), and the Viola Desmond Chair in Social Justice (Graham Reynolds, Department of History & Fine Arts).

As part of the Centre for Sustainability in Energy and the Environment (CSEE), new industrial research chairs in the areas of Clean Energy from Coal, Remediation Technology, and Renewable Energy are planned. Discussions are underway with several industrial partners and these chairs should be in place during 2011/12.

Plan for Canada Foundation for Innovation

In the period covered by this plan, it is expected that major infrastructure projects will be coming forward to support research in the concepts and foci identified above. The CSEE will no doubt be a major part of this starting in the latter half of 2011. However, it is anticipated that other areas within these concepts and foci will also be developed through the CFI program. The focus will be on emerging areas rather than further applications from researchers that have had previous success. The intent is to use the CFI programs to maximize the impact across all disciplines within the institution.

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 the development of graduate level programs, 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.

Planning Process to Develop this Plan

While the research directions are continually evolving in any university and establishing a plan is often a moving target, it is vital and necessary for any university to have an inclusive process that allows input from all areas of the university. This plan was developed in collaboration between the Dean of Research and Graduate Studies and the Research Committee of the CBU Senate. The Research Committee includes faculty from all CBU academic schools as well as student representation. Once approved at the Research Committee, the plan was presented to the full CBU Senate which includes representation from the CBU administration (including all the Academic Deans) and faculty. A notice of motion for approval of this document was given at the May 6, 2011 Senate meeting. The document was made available to the CBU community and a town hall meeting was held on May 12, 2011 for feedback. The

document was revised based on feedback received, reapproved by the Research Committee and approve unanimously at the June 17, 2011 Senate meeting.

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 plan. In fact, it is hoped that the Strategic Research Plan will both guide and motivate the continuing development of a rich and productive research culture. The CBU Strategic Research Plan is dynamic and open to annual update as necessary with a complete re-examination every five years.

Table 1. Research Chair Summary (as of June 2011)

Research Concepts & Foci	Chair Title	Chairholder	Chair Type	Funding	Time Period
All 4	CRC in Integrative Science	Cheryl Bartlett	Tier I CRC	SSHRC	2002 – 2009, 2009 – 2016
All 4	CRC in Intangible Cultural Heritage	Richard MacKinnon	Tier I CRC	SSHRC	2005 – 2012
2 & 4	CRC in Molecular Spectroscopy	Dale Keefe	Tier II CRC	NSERC	2006 – 2011
2 & 4	University Chair in Marine Ecosystem Research	Bruce Hatcher	University	University	2004 –
All 4	Industrial Research Chair in Mine Water Remediation and Management	Christian Wolkersdorfer	Industrial	Enterprise Cape Breton Corporation / Cape Breton Development Corporation	2008 – 2013
All 4	Purdy Crawford Chair in Aboriginal Business Studies	Keith Brown	University	Private Sector / INAC / Province of NS / Enterprise Cape Breton Corporation	2010 –
1, 2 & 3	Viola Desmond Chair in Social Justice	Graham Reynolds	University	Private Sector	2010 –
All 4	Chair in Remediation Technology	TBA	Industrial	TBD	2011 –
All 4	Chair in Clean Energy from Coal	TBA	Industrial	TBD	2011 –
All 4	Chair in Renewable Energy	TBA	Industrial	TBD	2011 –