

**NETWORKS OF CENTRES OF EXCELLENCE
(NCE) PROGRAM**

**Results-Based Management and Accountability
Framework**

June 2002

http://www.nce-rce.gc.ca/pubs_e.htm

1 Program Profile

1.1 Origin and Background

The Networks of Centres of Excellence (NCE) program was established as a pilot project in 1989 as part of the Government of Canada's science and technology strategy to better link research with wealth creation.

When the NCE program was initiated, it was somewhat controversial. There were two central features of the program: (1) the "distributed network model"; and (2) the focus on generating practical applications from fundamental research programs, working in concert with industry partners. At the time, no one knew if these features would add value, or indeed if they would work at all. The program was conceived as being experimental in nature, and individual networks took widely varied approaches to network management, research collaboration, and interactions with industry. There were virtually no other significant research programs in existence anywhere in the world that were similar to NCE.¹ Since that time, the number of networks has expanded considerably (there are currently 22), and those once-controversial aspects are now taken almost for granted. Where previously it was difficult to find network-type programs, now we have the Canadian Institutes of Health Research (CIHR). Where once it was considered potentially dangerous to link pure research too closely to industry, now the National Research Council encourages (or at least supports) its staff to create start-up companies to exploit NRC research findings. Where "sole-author" science was once considered the ultimate test of scientific strength, now there are programs that encourage not just national and international collaboration, but full intercontinental collaboration. Thus the NCE model is less unusual, while the research environment has changed significantly around it.

1.2 Deliverers and Co-deliverers

The main deliverers of the program include the three granting agencies: the Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes of Health Research (CIHR) and the Social Sciences and Humanities Research Council (SSHRC) as well as Industry Canada.

Canadian universities themselves, as well as affiliated hospitals and research institutes, and some industry consortia, also invest significant resources for the development and maintenance of the networks and, as such, are key players in delivering the NCE program.

¹ Even five years ago, it was uncommon to find non-Canadian scientists who had ever heard of the distributed network model.

1.3 Resources

NCE Program Budget Allocation:	Total \$ to current year:
	Phase 1 (1988-94) = \$240 million
	Phase 2 (1994-99) = \$190.8 million
	Ongoing (yearly):
	(1998-99) = \$47.4 million
	(1999 onward) = \$77.4 million
NCE Operational Budget Allocation: \$ 2.9 million per year	

1.4 Reach

Primary targets

Primary targets are the individuals and organizations that the deliverers (the four funding partners) aim to mobilize in order to achieve the expected results. University faculty and students, as well as public and private sector partners, play a significant role in achieving these results.

Other stakeholders

Industries and organizations within the areas covered by NCE networks are important stakeholders that benefit from the research results generated by the networks. In many instances, they are closely involved in commercializing new products, services or processes or in adopting new practices and policies, linked to NCE research. Globally, the NCE program also bears the potential for impact on the development of entirely new industrial sectors in Canada. Parliament is another stakeholder given the significant role played by the NCE program within the federal science and technology strategy as well as within the various activities of the Industry Canada portfolio. The Canadian public can also be considered as a stakeholder since the results are already known to have important impacts on the economy and on the quality of life of Canadians. Moreover, at the international level, many research results of the Program have impacted on the development of international standards, policies and regulations, thus affecting individuals and organizations outside Canada. Other of the networks' stakeholders include collaborators, consultants, clients, suppliers, various levels of government, and the written and electronic media that closely monitor the NCE program.

1.5 Planned Results and Final Outcomes

The goal of the NCE program is to mobilize Canada's research talent in the academic, private and public sectors and apply it to the task of developing the economy and improving the quality of life of Canadians.

This NCE program goal is accomplished by investing in national research networks that meet the following objectives:

- Stimulate internationally competitive, leading-edge fundamental and applied research in areas critical to Canadian economic and social development;
- Develop and retain world-class researchers in areas essential to Canada's productivity and economic growth;
- Create nation-wide multidisciplinary and multisectorial research partnerships that integrate the research and development priorities of all participants; and
- Accelerate the exchange of research results within the network and the use of this knowledge within Canada by organizations that can harness it for Canadian economic and social development.

1.6 Governance Structure

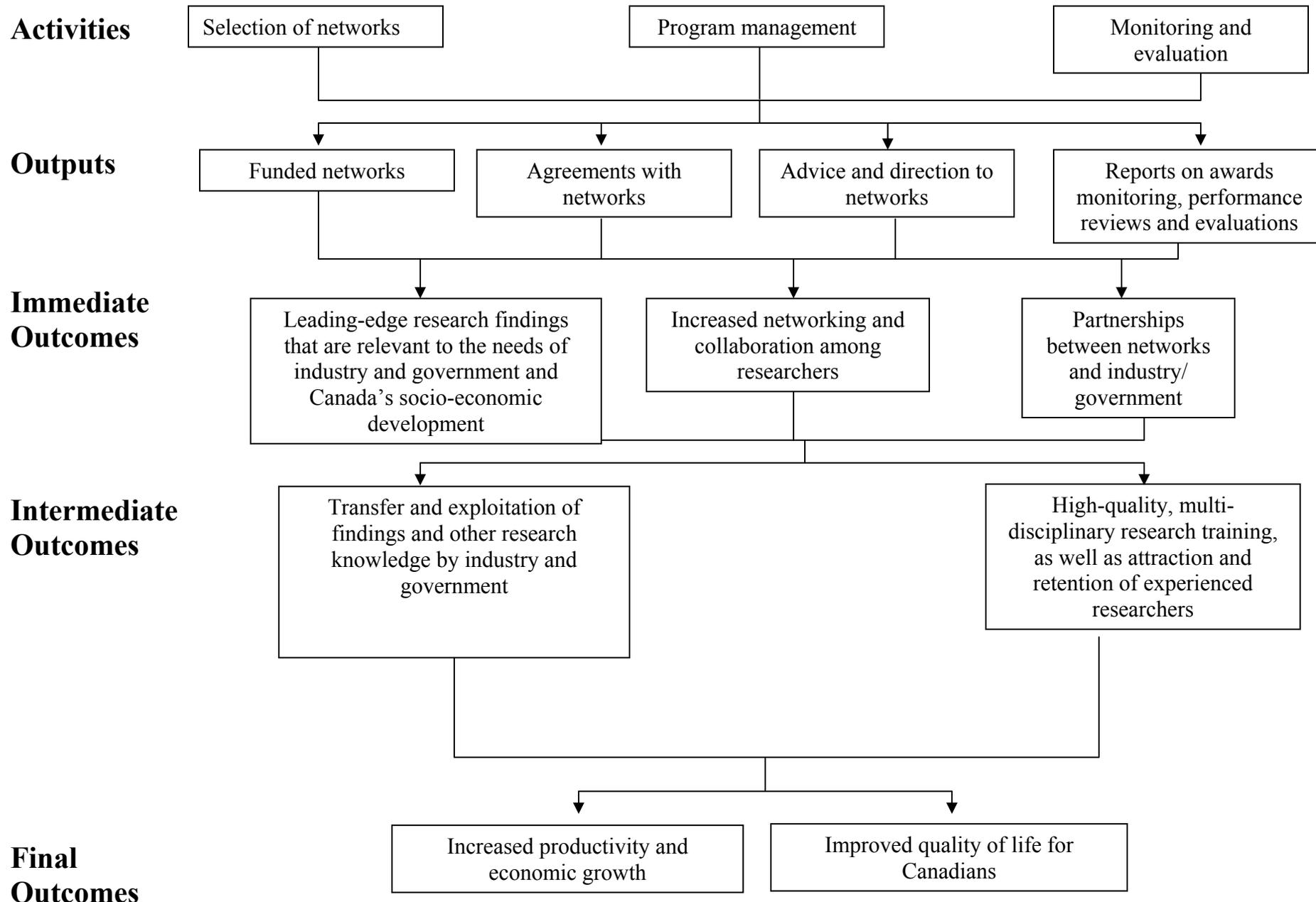
The two bodies governing the NCE program are:

- The NCE Steering Committee, composed of the presidents of the three granting agencies and the deputy minister of Industry Canada; and
- the NCE Management Committee, composed of director generals from the three granting agencies and Industry Canada, the director of Policy and International Relations (NSERC), and the director of the NCE program.

2. Logic Model

A logic model identifies the linkages between the activities of a program and the achievement of its outcomes. It succinctly clarifies the set of activities that make up the NCE program and the sequence of outcomes that are expected to flow from these activities. The following logic model is an illustration of how the activities of the NCE program are expected to lead to the achievement of the final outcomes.

Logic Model – Networks of Centres of Excellence Program



2.1 Activities

Program management

The NCE Directorate is responsible for the day-to-day management of the NCE program. The NCE Directorate receives administrative support from NSERC.

Selection of networks

Competitions are held regularly for renewal of existing networks and for new networks to be funded. All funding decisions are based on an arm's length and peer-reviewed assessment of applications by expert panels and selection committees.

Monitoring and evaluation

The monitoring of awards is an ongoing function of the NCE Directorate that consists of ensuring that NCE funds are used effectively to attain the expected results. These monitoring activities are linked to ongoing performance measurement and the data collected in this context can also be used for the purpose of periodic evaluations.

In order to rationalize the various reporting requirements of the program, the proposed RMAF is aligned to existing peer-review and program monitoring processes. The major tools used in this context are annual statistical and financial tables; annual corporate reports; mid-term review reports; and progress reports for renewal applications. To facilitate consistency and comparability of information and data, these tables and reports are collected annually from the 22 networks using pre-set templates and models.

The NCE Directorate will compile, revise and analyze statistics annually and report to the NCE Management Committee on various trend it will also confirm if the NCE program objectives have been met. The NCE Management Committee may then make recommendations to improve or adjust the program if necessary. Summative evaluations will also be used to monitor and evaluate program performance every five years.

2.2 Outputs

Funded Networks

As a result of the peer-reviewed competitions, new networks are selected and funded. The Selection Committee recommends the annual grant amounts to be allocated to the networks funded, and the Steering Committee makes the final decision on the funding. The NCE Directorate informs the applicants of the competition results. Networks are then created and maintained to:

- stimulate internationally competitive, leading-edge fundamental and applied research in areas critical to Canadian economic and social development;

- develop and retain world-class researchers in areas essential to Canada's productivity and economic growth;
- create nation-wide multidisciplinary and multisectorial research partnerships that integrate the research and development priorities of all participants; and
- accelerate the exchange of research results within the network and the use of this knowledge within Canada by organizations that can harness it for Canadian economic and social development.

Agreements with funded Networks

Prior to the release of the first instalment of the award to the network, a Funding Agreement that outlines the terms and conditions for funding under the NCE Program, as well as the governance structure of the network must be signed by designated representatives.

Release of the first instalment of the award is also conditional on the signing of a Network Agreement by participating institutions that receive NCE funds. This agreement sets out the operating rules of the network and outlines the rights and obligations of its investigators and participating institutions.

Advice and direction to Networks

Networks receive advice and direction from Program Management on various aspects related to the networks' development and ongoing activities. They also receive advice on requirements and procedures for negotiation of Internal Agreements.

Reports on awards monitoring, performance reviews and evaluations

Networks provide annual statistical and financial tables; mid-term review reports; and progress reports for renewal applications. Annual corporate reports are also submitted by networks and constitute an important information and data input into the performance-based management system.

2.3 Outcomes

Immediate Outcomes

The networks are expected to generate leading-edge research that is relevant to Canada's socio-economic goals. In addition, the research should be carried out in a way that involves a high degree of networking and collaboration among researchers.

The NCE program was designed to overcome the traditional barriers between university research, industrial exploitation and public use of research results and stimulating collaboration. In this context, networks are expected to build strong partnerships with industry and government in the first years of their existence.

Intermediate Outcomes

An important outcome is the exploitation of findings and knowledge to industry, government and other user sectors. This will be achieved by generating high-quality research that meets the needs of government, industry and other user groups and that is relevant to Canada's socio-economic development.

In addition, the program should contribute to strengthening Canada's research base, through the training of new researchers in a multidisciplinary and multisectoral setting and attraction and retention of experienced researchers.

Final Outcomes

Ultimately, the NCE program should contribute to the government's overall objectives of improved quality of life and a stronger economy.

3. Performance Measurement Strategy

Ongoing performance measurement is the regular collection of information for monitoring how a program is doing at any given time. It can be used to report on the level of attainment of planned results and on performance trends over time.

The following performance measurement strategy lists the planned outputs and outcomes of the NCE program as well as the key pieces of information that need to be collected, (i.e., the performance indicators) in order to monitor the progress of the program toward the achievement of its final outcomes as described in the logic model.

3.1 Outputs

Performance area	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency
Funded networks	Number of funded networks Amounts allocated to the funded networks	Selection Committee report/Steering Committee recommendations	NCE Directorate	Every 1-2 years
Agreements with networks	Nature and number of agreements	Funding and network agreements	NCE Directorate	Every 1-2 years
Advice and direction to networks	Opinions of program participants	Survey of network participants	SSHRC evaluation staff	Summative evaluation (every five years)
Reporting on awards	Number of participants, contributions, expenditures, HQP	Statistical reports	NCE Directorate	Annually

3.2 Outcomes

Immediate outcomes

Performance area	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency
Leading-edge research findings that are relevant to the needs of industry and government and Canada's socio-economic development	Expert opinion (assessments by members of Mid-term Review Committees and by members of Selection Committees at Renewal Application stage) on the quality and relevance of the research findings	Mid-term review reports Renewal review reports	NCE Directorate	Every 3-4 years
	Number of peer-reviewed publications and presentations	Statistical reports	NCE Directorate	Annually
	Number and nature of national and international prizes and awards to NCE researchers for NCE research	Mid-term reviews Annual corporate reports	NCE Directorate	Every 3-4 years Annually
	Number of invitations as guest speakers at major international conferences and congresses	Mid-term reviews Annual corporate reports	NCE Directorate	Every 3-4 years Annually
Increased networking and collaboration among researchers	Distribution of researchers by province, institution, discipline and sector	Statistical reports	NCE Directorate	Annually
	Number of joint authorship publications	Statistical reports	NCE Directorate	Annually
Partnerships between networks and industry /government	Distribution of network partners by province and sector	Statistical reports	NCE Directorate	Annually
	Lists of members and organizational affiliation of Research Planning Committees and of research projects	Statistical reports and annual corporate reports	NCE Directorate	Annually
	Assessment by members of Mid-term Review Committees	Mid-term review reports	NCE Directorate	Every 3-4 years
	Case studies demonstrating collaborations in planning and conducting research	Case studies	SSHRC evaluation staff	Summative evaluation
	Amounts of cash and in-kind contributions leveraged by NCE funds	Statistical reports	NCE Directorate	Annually

Intermediate outcomes

Performance area	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency	
Training of new researchers as well as attraction and retention of experienced researchers	Number of post-docs working on NCE projects	Statistical reports	NCE Directorate	Annually	
	Number of graduate students working on NCE projects	Statistical reports	NCE Directorate	Annually	
	Number of undergraduate students working on NCE projects	Statistical reports	NCE Directorate	Annually	
	Others not counted above working on NCE projects	Statistical reports	NCE Directorate	Annually	
	Number of students/trainees employed in skilled jobs (in Canada) by sector after they leave networks	Statistical reports	NCE Directorate	Annually	
	Number of research personnel retained in Canada due to networks	Survey of NCE researchers	SSHRC evaluation staff	Summative evaluation	
	Number of research personnel attracted to Canada from other countries due to networks	Statistical reports	NCE Directorate	Annually	
Transfer to and exploitation of findings and other research knowledge by industry and government	Number of patent applications	Statistical reports	NCE Directorate	Annually	
	Number of patents issued	Statistical reports	NCE Directorate	Annually	
	Number of license agreements	Statistical reports	NCE Directorate	Annually	
	Estimated licensing revenues generated by the networks	Statistical reports	NCE Directorate	Annually	
	Number of new and existing companies developed and maintained	Statistical reports	NCE Directorate	Annually	
	Number of transfer agreements	Statistical reports	NCE Directorate	Annually	
	Lists of new or improved products, services and processes resulting from the networks	Statistical reports	NCE Directorate	Annually	
	Case studies demonstrating the impact of the NCE program on national and international socio-economic policies, norms, standards and regulations	Mid-term review reports	Annual corporate reports	NCE Directorate	Every 3-4 years
		Annually			
Number and magnitude of international agreements	Mid-term review reports Annual corporate reports	NCE Directorate	Every 3-4 years Annually		

Final outcomes

Performance area	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency
Increased productivity and economic growth	Number of jobs created outside the networks	Statistical reports	NCE Directorate	Annually
	Examples of companies created in new and underdeveloped industrial sectors	Statistical reports Annual corporate reports	NCE Directorate	Annually
	Case studies demonstrating the impacts of network innovations on existing industries	Case studies Annual corporate reports	SSHRC evaluation staff	Summative evaluation Annually
	Case studies demonstrating the impacts of networks on national, international norms and regulations	Mid-term review reports Annual corporate reports	NCE Directorate	Every 3-4 years Annually
	Value of benefits and costs associated with the outcomes of the NCE program	Benefit/cost analysis	SSHRC evaluation staff	Summative evaluation
Improved quality of life	Number of jobs created outside networks	Case studies	SSHRC evaluation staff	Summative evaluation
	Examples of new processes and practices, new policies created that will improve quality of life	Annual corporate reports Mid-term review reports Case studies	NCE Directorate SSHRC evaluation staff	Annually Every 3-4 years Summative evaluation
	Case studies demonstrating the networks' contributions to the health and social well-being of Canadians	Mid-term reviews Case studies	NCE Directorate SSHRC evaluation staff	Every 3-4 years Summative evaluation

4. Evaluation Strategy

The NCE program has conducted three major evaluations within the past nine years. The 1992/93 “interim” evaluation was very early in the program’s lifetime, and dealt mainly with program design and program and network management issues to ensure the program was “on the right track.” The second, carried out in 1996-1997,² was very thorough and comprehensive. It focused mainly on understanding the value added by the networking aspects of the program, and on documenting the program’s impacts on research, training, and users in government and industry.

² *Evaluation of the Networks of Centres of Excellence Program*, The ARA Consulting Group (now part of KPMG Consulting), January, 1997.

The current evaluation was launched in September 2001 and completed in June 2002. In line with the new Treasury Board policy on evaluation and the timeline for the study, the current evaluation has a focused and targeted approach. Its overall objective is to determine and analyze the major achievements and results in relation to the program objectives as well as to assess the value-added of the NCE program in the context of the current portfolio of federal programs in support of science and technology.

KPMG Consulting was commissioned to conduct the current evaluation. The evaluation is being managed by the Social Sciences and Humanities Research Council.

The NCE Program (as a low-risk program) will be evaluated every five years in line with the Treasury Board policy on transfer payments. Therefore, the next evaluation will be conducted in 2007.

The following evaluation issues were identified by KPMG Consulting and the NCE program Management and Steering Committees for the 2002 evaluation.

4.1 Evaluation Issues

Relevance

Evaluation issue	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Summative Evaluation
High Priority					
Is there a real need for the NCE program?	Information on how similar programs in other countries address similar problems with respect to the changing research environment. Informed opinions of the various stakeholders including Network managers, scientific leaders, Expert Panels and Selection Committees, researchers, and partners	Literature review Interviews with network managers and scientific directors Interviews with granting agencies Interviews with Expert panels and selection committees members Survey of network partners Survey of researchers Survey of Board of Directors' Chairs	SSHRC evaluation staff		√

Success Issues

Evaluation issue	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Summative Evaluation
High Priority					
What are the unique or incremental impacts of the NCE program?	Please refer to list of indicators used to measure outcomes under the performance measurement strategy	NCE performance data and other reports (e.g., Mid-term and Renewal Reports, reports of the Selection Committee and Expert Panels)	NCE Directorate	√	
	Informed opinions of key stakeholders (network managers and scientific directors, partners, researchers, granting agencies, Expert Panels etc.)	Literature review Survey of network partners Survey of researchers Survey of Board of Directors' Chairs Interviews with network managers and scientific directors Interviews with granting agencies and program officers Interviews with Expert Panels and Selection Committee members Case studies Benefit/cost analysis	SSHRC evaluation staff		√

Network and Program Design Issues

Evaluation issue	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Summative Evaluation
High Priority					
If the program is still needed, what changes to program design would make it more relevant and effective?	Informed opinions of key stakeholders (network managers, partners, researchers, granting agencies, Expert Panels etc.)	Interviews with network managers and scientific directors Interviews with granting agencies and program officers Interviews with Expert panels and selection committees Survey of researchers Survey of partners Survey of Board of Directors' Chairs	SSHRC evaluation staff		√

<p>What are the factors in a network that facilitate or hinder success?</p>	<p>Informed opinions of key stakeholders (network managers, partners, researchers, granting agencies, Expert Panels etc.)</p>	<p>Interviews with network managers and scientific directors</p> <p>Interviews with granting agencies and program officers</p> <p>Interviews with Expert Panels and selection committees</p> <p>Survey of researchers</p> <p>Survey of partners</p> <p>Survey of Board of Directors' Chairs</p>	<p>SSHRC evaluation staff</p>		<p>√</p>
<p>Evaluation issue High Priority</p>	<p>Indicators</p>	<p>Data source/ collection method</p>	<p>Responsibility for data collection</p>	<p>Timing/frequency</p>	
				<p>Ongoing Monitoring</p>	<p>Summative Evaluation</p>

<p>What should be the appropriate role of the social sciences and humanities in leading networks, and within the operation of individual networks?</p>	<p>Level of funding and commitment to social sciences and humanities networks</p> <p>Comments made by experts on Social Sciences and Humanities networks</p> <p>Informed opinions of key stakeholders (network managers, SSHRC management, granting agencies, Expert Panels and Selection Committee members, Board Chairs)</p>	<p>Program performance data</p> <p>Mid-term reviews</p> <p>Interviews with network managers and scientific directors</p> <p>Interviews with granting agencies and program officers</p> <p>Interviews with Expert panels ad selection committees</p> <p>Survey of partners</p> <p>Survey of Board of Directors' Chairs</p>	<p>NCE Directorate</p> <p>SSHRC Evaluation staff</p>	<p>√</p>	<p>√</p>
<p>Is the 14-year funding cycle appropriate for all networks?</p>	<p>Informed opinions of key stakeholders (network managers and scientific directors, partners, researchers, program officers, Expert Panels and Selection Committee members, Board Chairs)</p>	<p>Interviews with network managers and scientific directors</p> <p>Interviews with program officers</p> <p>Interviews with Expert panels ad selection committees</p> <p>Survey of researchers</p> <p>Survey of partners</p> <p>Survey of Board of Directors' Chairs</p>	<p>SSHRC evaluation staff</p>	<p></p>	<p>√</p>

Evaluation issue Medium Priority	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Summative Evaluation
What is the appropriate manner in which to wind down the networks that will soon see their funding terminated?	Informed opinions of key stakeholders (network managers, partners, granting agencies, Expert Panels etc.)	Interviews with network managers and scientific directors Interviews with granting agencies and program officers Interviews with Expert panels and selection committees Survey of partners Survey of Board of Directors' Chairs	SSHRC evaluation staff		√
Evaluation issue Low Priority	Indicators	Data source/ collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Summative Evaluation
Does the NCE program encourage, facilitate and support multidisciplinary and multisectoral research where this is appropriate?	Principal Investigators' disciplines in NCE database Informed opinions of key stakeholders (network managers, researchers, Expert Panels and Selection Committee members, Board Chairs)	Program performance data Interviews with network managers and scientific directors Interviews with Expert Panels and selection committees Survey of researchers Survey of Board of Directors' Chairs	NCE Directorate SSHRC evaluation staff	√	√
How effective is NCE program delivery?	Informed opinions of key stakeholders (network managers and scientific directors, partners, researchers, program officers, Board Chairs)	Interviews with network managers and scientific directors Interviews with program officers Survey of partners Survey of researchers Survey of Board of Directors' Chairs	SSHRC evaluation staff		√

5. Reporting and Implementation strategy

5.1 Reporting Strategy

Management authority: The NCE Steering Committee is responsible for reporting the performance information and the evaluation results to Industry Canada. The evaluation of the NCE program is conducted by SSHRC. To keep this process arms' length, SSHRC created an Evaluation Steering Committee to oversee the evaluation process for the NCE program and the Canada Research Chairs program and submit a final evaluation report to the NCE Steering Committee. The 2002 Evaluation Steering Committee was composed of representatives from the three granting agencies, as well as from Industry Canada, the Canadian Foundation for Innovation, Treasury Board, and the Department of Finance.

Mechanisms for reporting: annual progress reports, summative evaluations (every five years)

5.2 Implementation strategy

The NCE Management Committee oversees the implementation of the RMAF and all other reporting requirements. This implies that the NCE Management Committee and staff of the NCE Directorate are responsible for managing adequate data collection, performance reviews and reporting on an ongoing basis. Below is a table showing the implementation and reporting dates for 2002.

TABLE 5.2

Activity	Responsibility	Date completed
Monitoring of implementation and reporting	NCE Management Committee	Ongoing
Develop definitions and instructions to accompany Annual Tables	NCE Directorate	Feb/March 2002
Develop database and determine data entry and quality control protocols	NCE Directorate/ISD	Spring 2002
1999-00 and 2000-01 Annual Reports submitted to Minister of Industry	NCE Directorate	Spring 2002
Evaluation Study	SSHRC/KPMG	June 2002
Submission of RMAF to Treasury Board	NCE Directorate	June 2002
Annual Tables submitted	Networks	June 30, 2002
Data entry and quality control	NCE Directorate	Summer 2002
Annual Corporate Reports submitted	Networks	September 30, 2002
2001-02 Annual Report submitted to Minister of Industry	NCE Directorate	November 2002