

Progress Toward a Canadian ‘Centre’ for Women in SETT (Science, Engineering, Trades and Technology)

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Abstract—The Canadian Coalition of Women in Engineering, Science, Trades and Technology (CCWESTT) has embarked on a multi-year initiative to build bridges between organizations in Canada and strengthen our influence in government, industry, professional associations and post-secondary institutions, to increase women’s participation and leadership in these fields. The Women in SETT (Science, Engineering, Trades and Technology) Initiative has the goal of bringing a strong unified voice to institutional policy assessment and development through the establishment of a fully resourced national entity. (<http://www.ccwestt.org/sett/sett.asp>)

Phase I of the initiative, funded primarily by the Women’s Program of Status of Women Canada (SWC) and the Natural Sciences and Engineering Research Council of Canada (NSERC), was completed in late 2004 with a final report describing the important outcomes of seven regional and national meetings. Those outcomes included the positive engagement and support of stakeholders, identification of key issues, and acknowledgement of CCWESTT’s leadership. Underscoring the extensive support for the initiative were generous financial contributions from government, industry, professional associations and academia.

In 2005, CCWESTT embarked on Phase II, again with major funding from SWC, NSERC and other organizations. We have produced a compelling business case for the increased participation of women in SETT sectors and for the establishment of a national entity; examined comparable centers in the US, Canada and internationally; expanded networks and partnerships; and identified some of the collaborators for the next phase of work. A model of a national entity with recommendations on its mission, objectives, activities, operational structure and governance will be presented to stakeholders and key government, industry and education leaders in a national forum in June 2006 in Calgary.

This paper will present the background of the Women in SETT Initiative, activities of Phase II, the business case, information on the proposed model, and next steps.

Canadian Coalition of Women in Engineering, Science, Trades and Technology (CCWESTT)

CCWESTT is a voluntary, non-profit national coalition of groups that promotes and advocates for the full participation of women in SETT to government, business, industry and educational institutions, and applies new vision to these fields. Established in 1987, CCWESTT consists of 25 member organizations across Canada who provide an extensive resource and support

network, and disseminate critical information on the successful integration and contributions of women in SETT fields.

CCWESTT member groups (see Appendix) are located in provinces across Canada and encompass a comprehensive range of fields from engineering, technology, science and mathematics to the trades; sectors spanning academia to industry; and organizational type from voluntary science promotion groups such as the Canadian Association for Girls in Science to associations such as the Canadian Council of Professional Engineers. Member groups have representation on the Board, communicate through bimonthly teleconferences and an electronic newsletter, and share research and project information more comprehensively at biannual national conferences.

CCWESTT operates from a feminist perspective and strives for inclusion, cooperation, trust and integrity in its partnerships and collaborations. The long history of the Coalition, shared core values, collaborative efforts, and significant regional and national activities of member groups have provided a firm base from which CCWESTT has embarked on the Women in SETT Initiative. Through Women in SETT, CCWESTT is creating a strong national voice to effect significant institutional policy and practice change to increase the recruitment, retention and advancement of women in SETT.

Introduction

There is a substantial body of research and statistical information that documents the current under-representation of women in SETT fields across North America (see, for example, CCWESTT, 2004a; WEPAN, 2006). Data from the 2001 Canadian Census reveal that while women are 46.7% of the total paid work force, they make up only 21.5% in science, engineering and technical fields (11.1% in the engineering sector) and 7.0% in trades and related occupations (3% in construction) (Statistics Canada, 2001). The numbers are similar in the U.S. – in 2001, women represented 46.5% of the total workforce and 10.4% of engineers (National Science Foundation, 2004). In 2004, women made up 2.5% of construction and extraction occupations in the U.S. (Bureau of Labor Statistics, 2005).

Many programs have encouraged girls and young women to take science and mathematics in high school and to enter post-secondary SETT programs, and many organizations and initiatives are focusing on the critical areas of the recruitment and career success for women in these fields. The proportion of females attending Canadian universities is now 59%, but the majority of female students choose to study arts and social sciences (Canadian Association of University Teachers, 2005). Within the science and engineering fields, there are significant issues of retention for women, and many who are trained in science and engineering do not continue working in these fields after they graduate.

At the same time there are increasing labor shortages in the skilled trades and technology fields, and emerging talent shortfalls in science and engineering sectors (Emerson, 2005). CCWESTT recognizes that there is a critical opportunity to develop solutions to skills shortages, increase Canada's innovation potential, and address gaps at the institutional level to effect significant change. In 2003, therefore, CCWESTT embarked on the first stage of a national initiative to engage organizations and influence policy to increase women's participation, retention and leadership in SETT fields throughout Canada. The Women in SETT Initiative is supported by a

major grant from the Women's Program of Status of Women Canada and other contributions from government, industry, professional associations, community organizations and universities.

Women in SETT Initiative Phase I

The model for the Women in SETT Initiative was built on a foundation of community consultation, collaboration and positive engagement at the grassroots level, expanding from CCWESTT organizations themselves. The Working Committee is comprised of thirteen experienced individuals who work for the increased recruitment and retention of women in the full spectrum of SETT fields across Canada, and several have received national recognition for their service and contributions.

The Working Committee structure and the effective guidance of its two Co-Chairs (one working for women in the trades/technology sector on the east coast of Canada and the other in an academic engineering and science setting on the west coast) support the active participation of its members with decision-making by consensus. In Phase I, a group of five distinguished advisors representing key communities of interest was available to help the work of the Committee, and to help build important collaborations and relationships. A Project Coordinator provides support to the Co-Chairs and the Committee and carries out much of the day-to-day work of the Initiative, and a Research Assistant has been contracted in Phase II to collect statistical data and research.

As part of Phase I of the Women in SETT Initiative - Building Communities, three Regional Consultations were held across Canada in 2003-04 and were attended by leaders and representatives from industry, government, small and medium sized enterprises, universities, colleges, the labor movement, and non-governmental organizations (NGOs). These invited stakeholders reviewed issues and effective practices, identified priorities and identified regional issues. Important areas of consensus emerged from the Consultations (CCWESTT, 2004a):

- Women add value to the workplace
- Women in SETT are an important national resource
- Collaborations are key to building the SETT workforce

Professional evaluation of the Regional Consultations through participant interviews concluded that

The strength of its [CCWESTT's] connection to the grassroots was seen to provide a strong foundation for policy discussions with government as CCWESTT undertakes its national role of advocacy. Respondents articulated that tangible national initiatives depend on CCWESTT continuing to play a strong leadership role for women in SETT across the country and, in so doing, engage key stakeholders... (CCWESTT, 2004b)

From the Consultations, new contacts were made and strategic alliances were formed that evolved into collaborations. As a next step in Phase I, information from the Regional Consultations was brought to an invited audience of decision-makers in government, academia, business, professions, NGOs and labor at a National Forum and Leaders' Meeting in Ottawa in April 2004. These high-level meetings further strengthened and expanded key stakeholder engagement, CCWESTT credibility, and led to other national opportunities including invitations to make presentations at two significant National Roundtables in 2004 and 2005. In November 2004, at a National Forum co-hosted with the Canadian Institutes of Health Research, and the Federal Science and Technology Community, CCWESTT presented a Briefing Paper with

significant recommendations developed from Phase I to policy advisors and institutional and government leaders; a subsequent presentation in 2005 reinforced those calls to action (CCWESTT, 2004a,c).

Women in SETT Phase II

Building on Phase I outcomes and the successful engagement of organizations including departments and agencies in the Federal Government, CCWESTT has undertaken the next critical steps in institutionalizing change. Phase II activities include:

- Validation of the priorities of women in SETT and stakeholder organizations from the community
- Positioning the clear business case for increasing women in SETT and providing related critical information to decision makers in government, business, sector councils, academia and other organizations
- Analyzing research on comparable national and international models
- Releasing details of *a national model* to influence policy and take action to increase women's participation and advancement in SETT at a National Forum of SETT stakeholders in June 2006

Validation and Integration of Priorities

The process and activities of the Women in SETT Initiative have been designed to ensure that the perspective and priorities of women and organizations working in this area are incorporated in the development of the national model. There has been a clear evolution and growth of the Initiative resulting in an increase in the number of key contacts. Success in this process continues to reinforce and strengthen engagement and will mobilize support for the model and next steps.

One tool in this strategy was an online survey of all Phase I participants and others identified to expand the breadth of input. The survey sampled individuals' and organizations' priorities on the principal roles for a national model, services and information that the model should provide, the model's primary audience(s), and sources of funding support. These priorities were then analyzed and used to inform the development of the model.

Communication with women in SETT individuals and organizations has continued to generate input and has included updated website information, teleconferences, board meetings, online news distribution, annual conferences and articles.

The Business Case

As noted in the Introduction, in addition to considerations of equity, there is a compelling economic argument for increasing the participation of women in SETT. The results of a comprehensive literature review and sector scan were summarized in the research paper *Women in SETT: The Business Case* (Emerson, 2005). Citing studies and statistical information from Canada, the U.S. and other countries, the document highlights the benefits of enhancing the participation and leadership of women in SETT fields to organizations and to nations:

- Solution to skills shortages
- Access of employers to a broader base of talent
- Increased innovation potential

- Enhanced market development
- Greater return on human resource investment
- Stronger financial performance
- Improved governance
- Increased national economic growth index

This business case has been used in articles for the general public and in presentations to stakeholder individuals and groups to underscore the need for and value in a national model to influence policy and promote action to increase women in SETT fields. Presentations have also been made in conferences and similar events. A marketing package was professionally designed to assist in this process.

At the same time, to help CCWESTT representatives become more effective advocates on gender issues locally, regionally and nationally, the Women in SETT initiative provided an introductory workshop on Gender Based Analysis for its Board and Working Committee (Status of Women Canada, 2004).

Key Stakeholder Collaborations

In addition to the stakeholder meetings referred to above, CCWESTT was an invited participant in two key national undertakings. In October 2005, a National Forum, *The Harvard Experience – Bridges to the Canadian Context*, was organized by the Associate Deputy Minister of Industry Canada, Carole Swan, and Senator Lillian Dyck. It was facilitated by Arthur Carty, Canada's National Science Advisor to the Prime Minister, featured Holly Sargent and Dorothy Zinberg from Harvard University, and included a presentation by Margaret-Ann Armour of CCWESTT on the Women in SETT Initiative.

One significant outcome of that event was the commitment by the National Science Advisor to help create a Blue Ribbon Panel to develop a national strategy to increase the participation of women in science and technology in Canada. CCWESTT has representation on the Coordinating Committee to plan for the Panel and is providing background information to the Committee.

Two other significant collaborations have strengthened in Phase II. CCWESTT representatives are participating in the development of a multi-disciplinary research proposal initiated by one of the five NSERC/Industry University Research Chairs for Women in Science and Engineering - "Addressing the Under Representation of Women in Science and Engineering: A Multi-Faceted Approach". Representatives from the Women in SETT Initiative have also been active participants in the Women in Federal Science and Technology Initiative to increase women's recruitment and retention in the public service.

Comparable Models Research

To help in the process of developing a national Canadian model, the Working Committee has researched the structure and operation of comparable bodies in Canada and internationally. The latter included the National Center for Women and Information Technology in the U.S. (www.ncwit.org), and the United Kingdom Resource Centre for Women in Science, Engineering and Technology (www.setwomenresource.org.uk). Information was also gathered from other sources including several ADVANCE Initiatives of the National Science Foundation

(www.nsf.gov) and the Anita Borg Institute for Women and Technology (www.anitaborg.org/). While some of the organizations examined were directly associated with women in SETT fields, others were national women's organizations working in other disciplines or on socio-economic issues, e.g. the Canadian Women's Health Network and the National Action Committee on the Status of Women.

In a face-to-face meeting, members of the Working Committee brought detailed information from site visits, interviews, and personal involvement to the group discussion which elaborated on the history, mission, audience, goals, services, operational structure, governance, staffing and funding of these comparable organizations. The pros and cons of each organization were evaluated for consideration in developing our model.

The National Model

As of the time of submission of this paper, details of the model are being developed. Among the elements being defined and elaborated on are those that will have been prioritized from the survey:

- Principal Role(s)
- Services / Information Provision
- Primary Audience(s)
- Funding Sources

Other aspects being developed include mandate / mission, goals, and proposed operational structure, staffing and governance.

Several key principles will distinguish it from other national centers, or organizations within Canada, and/or will guide its formation and mandate.

1. Breadth of SETT fields. Unlike those organizations which are specific to a single sector, e.g. engineering or information technology, or to science and engineering more broadly, the Canadian Women in SETT national model is also inclusive of technology and the skilled (apprenticeable) trades. This inclusion recognizes that technology and the trades underpin and support or parallel the work of scientists and engineers and are part of the continuum of sectors in which women have been traditionally under-represented. Additionally, the challenges and solutions are often the same or similar, and there is much to be learned and applied from effective policies and practices from across the wide spectrum of these fields.
2. A New Collaboration. The proposed model will not duplicate or replace the excellent award-winning initiatives, such as educational programs, of CCWESTT member groups and other organizations in Canada which promote SETT careers and support the success of women working in these fields. Rather, the model will find ways to bring attention to and support existing successful efforts.
3. National and Institutional Focus. The primary focus of the entity will be at the national level on policy analysis and input, dissemination of good practice, and clearinghouse for information and resources.

4. Relationship to CCWESTT. The model will be carefully designed to complement the current important role of CCWESTT, whether as a separate independent body or as a linked entity under the CCWESTT auspices.

Next Steps

During the winter and early spring of 2006, details of the National Model will be developed and the proposed entity will be presented to a National Forum of Stakeholders on June 21, 2006. This meeting will be held immediately before the CCWESTT National Conference *Producing Influential Leaders*, (www.ccwestt2006.ca) June 22-24 in Calgary, Alberta. The Forum will comprise invited representatives (including Phase I participants) from post-secondary institutions, NGOs, industry, professional associations, labor, entrepreneurs, and sector councils. Key policy makers and leaders from Federal Government departments and agencies will also be in attendance and include the National Science Advisor's Office, Natural Sciences and Engineering Research Canada, Industry Canada, Human Resources and Skills Development Canada, Health Canada, and Status of Women Canada.

Input from Forum participants will be analyzed and incorporated into the refinement of the model and proposal for the next steps. Application will be made for support from Status of Women Canada and other funders for Phase III to develop the structure, business plan and the stages for operationalizing for the entity.

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Appendix

CCWESTT Member Organizations

Alberta Women's Science Network

Assoc. of Professional Engineers & Geoscientists of Manitoba: Women's Advisory Committee

Canadian Association for Girls in Science

Canadian Association of Women in Science - Manitoba

Canadian Council of Professional Engineers

Canadian Engineering Memorial Foundation

Committee for Women in Mathematics of the Canadian Mathematical Society

Committee to Encourage Women in Physics

Division for Advancement of Women in Engineering and Geoscience

Hypatia Association

Immigrating Women in Science (SCWIST)

Let's Talk Science

l'Ordre des Ingénieurs du Québec – Women's Committee

Professional Engineers of Ontario - Women in Engineering Advisory Committee

Saskatchewan Women in Trades and Technology

Society for Canadian Women in Science and Technology

Status of Women in Science Committee (Brock University)

WISE (Women in Science and Engineering) Newfoundland & Labrador

WISE Ottawa

WISE Sudbury

WISE Toronto

Women Building Futures

Women in Resource Development Committee

Women in Scholarship, Engineering, Science and Technology

Women Inventors Project