



Recommendations for The Solid Waste Research Collaborative

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(1) Executive Summary

The purpose of this report is to identify areas of improvement for the SWRC and provide a series of recommendations based on a comparison of similar collaboratives. The report includes a literature review highlighting best practices for research collaboratives and a summary of interviews with six of research collaboratives from Canada and around the world.

The overarching areas for improvement for the SWRC are funding, structure, and information distribution. The areas where the SWRC are succeeding are facilitation and identifying research topics. Going forward, the SWRC would like to see clearly defined leadership, projects that advance towards implementation and real life applications, a clear and efficient approach to new projects, outcomes that benefit municipalities, and working towards realistic goals. Additionally, the SWRC Steering Committee would like to focus their efforts on three defined waste issues: construction and demolition, organics, and packaging.

For long term continuation of the SWRC the report lists and explains the following recommendations:

- Create an accessible platform for communication within the SWRC.
- Have steering committee meet in person at minimum once a year
- Email results of research projects to the SWRC network and post to a project section on the collaborative's website
- Formalize the process for starting new projects
- Determine key areas of interest for the Steering Committee
- Record the interests, affiliation, and other memberships of current and incoming participants of the SWRC
- Hire long-term, part-time staff to coordinate administrative, organizational, and communicative aspects of the SWRC
- Create a quarterly newsletter for the SWRC network
- Commit to regularly scheduled workshops at minimum once a year
- Diversify engagement pathways
- Update and maintain the SWRC website
- When initiating new projects, plan how research results will be distributed, implemented, and what implications they could have
- Expand the SWRC network
- Consider registering the SWRC as a nonprofit organization
- Communicate with university advancement offices to determine if the SWRC projects that involve post-secondary institutions qualify for funding or donations
- Present at internship information sessions for graduate programs

(2) Interviews with the SWRC Steering Committee

The following section is based on interviews with the SWRC Steering Committee members. The Steering Committee was asked a series of question on the Collaborative's successes, shortcomings, and what they would like to see moving forward.

(2.1) Goals of the SWRC

The Steering Committee was asked what the goals of the SWRC were. Below is a list of their responses.

"To initiate, conduct, and share research in municipal waste reduction."

"Creating an environment for individuals and entities to come together to move forward research on waste reduction and recycling with the goal of improving waste reduction and recycling in the region."

"To facilitate research and partnerships that are going to address some of the pressing waste issues in the region"

"Support Municipal challenges related to solid waste"

"To bring together researchers in the field of municipal waste and to facilitate research projects. Key words: Facilitate and Collaborate"

"To bring together academia, government agencies, and industry to identify opportunities that would result in initiatives to divert waste from landfills."

"Connect people and reduce waste. Waste disposition in Metro Vancouver and BC."

Summarizing these responses, the overarching goal of the SWRC can be stated as:

To support waste reduction and recycling in the BC region by bringing together interested parties and initiating research.

(2) Interviews with the SWRC Steering Committee

(2.2) Shortcomings

Funding

Similar to many other research groups, funding is not always consistent or guaranteed. The Collaborative needs funding for administering the SWRC and for the projects themselves. Thus far the Collaborative has relied on partners involved in specific projects for funding or facilities

Opportunity

An updated resource that clearly outlines potential funding opportunities available to the collaborative would eliminate replicated search efforts and quickly inform those involved in the project of what is available to them. *please see Appendix 1.*

Structure

The Steering Committee expressed that there is a lack of structure throughout the Collaborative. This lack of structure and formality is evident in the Collaboratives shortcomings in attracting and supporting new projects, sourcing funding and distributing information.

Opportunity

Clarifying structure and organization will improve the efficiency of the Collaborative and support its overall success. *Please see section 4.2 on page 11-12.*

Distributing information

Currently there is no portal for sharing information, such as finished research results, project ideas, project updates, resources, and project discussion. A lack of information distribution can result in lost opportunities for the Collaborative. Inaccessible results of a completed project limits that projects impact. As well, information sharing within the Collaborative allows for brainstorming, innovation, resource sharing, and further development of existing ideas.

Opportunity

Creating an accessible avenue for information sharing will ensure ongoing relevance and ingenuity. *Please see recommendation 4.1 (i) on page 10.*

(2) Interviews with the SWRC Steering Committee

(2.3) Successes

Facilitation

One of the successes repeated by committee members has been how important it is to bring people together to discuss a topic of concern. This has primarily taken the form of workshops on a central theme. At these workshops interested parties were able to discuss the issue at hand, and encouraged to form project partnerships to carry out the research. These workshops are able to stimulate and strengthen partnerships between stakeholders. By bringing together industry professionals and academics, the Collaborative is able to draw on participants' multi-disciplinary expertise to expand research possibilities.

Identifying research topics

Another success repeated by the Steering Committee members is the Collaboratives ability to identify areas in waste reduction that need further research. The Steering Committee is composed of individuals with a wide variety of expertise, so their determination of priority research areas is likely to reach a broad range of municipal and industry sectors, which supports the SWRC's goals. The relevance of selected research topics to the SWRC network has been confirmed by participants' excited engagement in past workshops..

(2.4) Going Forward

Going forward, the Steering Committee expressed that they would like to see:

-  More research projects advancing towards implementation and real life applications in municipalities;
-  Outcomes that benefit municipalities;
-  A more efficient approach towards starting projects;
-  Clear and defined leadership; and
-  Defined success metrics to formulate realistic goals.

(2.5) Three Key Areas

The Steering Committee identified three key areas of waste research:

-  Construction and Demolition (C&D) with a focus on wood waste
-  Organics
-  Packaging

(3) Literature Review

Collaborative research and innovation is of crucial importance to the development of universities, industries, regions and nations. The success of collaborative research projects is often dependent on the effectiveness of the collaboration, which can be supported through collaboratives like the SWRC. Collaborative research groups are generally composed of academic and industry parties with an interest and/or stake in the research. The importance of collaboration, and the formation of structured groups to support collaboration, has inspired literature analyzing the challenges and best practices learned from collaborative groups. This literature review analyzes, summarizes and highlights key points from five such studies, listed below.

- Article 1 Knobel, M., Patricia Simões, T., & Henrique de Brito Cruz, C. (2013). International collaborations between research universities: experiences and best practices. *Studies In Higher Education*,38(3), 405-424. <http://dx.doi.org/10.1080/03075079.2013.773793>
- Article 2 Kamarudin, M., Hasan, H., & Yahaya, N. (2014). Exploring the best practices of research management through university and industry collaboration. *Science International*.
- Article 3 National Council of University Research Administrators and the Industrial Research Institute,. (2006). *Guiding principles for the university - Industry endeavors*. National Council of University Research Administrators.
- Article 4 Johnson, W. (2003). University relations: the HP model. *Industry And Higher Education*,17(6), 391-395. Retrieved from <http://www.ingentaconnect.com/content/ip/ihe/2003/00000017/00000006/art00003>
- Article 5 Edmondson, G., Valigra, L., Kenward, M., Hudson, R., & Belfield, H. (2012). *Making industry - University partnerships work: Lessons from a successful collaboration*. ScienceBusiness Innovation Board AISBL. Retrieved from <http://www.sciencebusiness.net/Assets/94fe6d15-5432-4cf9-a656-633248e63541.pdf>

(3) Literature Review

The literature review is divided into three overarching themes that emerged in reviewing the articles: Communication, Planning, and Trust. The articles referenced in this literature review were based on case studies as well as the author's first hand accounts.

(3.1) Communication

Communication is vital to the success of any form of collaboration. Most of the articles emphasized the importance of communication between stakeholders and parties involved in the research project. In Article 2, Kamarudin et al. explained that there needs to be constant communication between all stakeholders involved in the project. By having proper communication, misunderstandings and errors are significantly reduced. Misunderstandings can lead to disappointment and discourage future collaboration. In article 3 the NCURA and IRI explained that all parties involved should support each other and their intents/interests. The issues that affect one party will inevitably affect the others. In order to protect each other, parties involved need to effectively communicate their stake and resulting benefits in the research project and collaboration.

It is important to communicate all limitations and restrictions that parties are experiencing to avoid miscommunication and understand what the collaborative is capable of achieving. In Article 4 Johnson describes how it is necessary for everyone involved in the collaborative to 'live' in each other's environments. This requires communication so that all parties involved are able to speak the same language and efficiently make use of each other's environment, facilities, and resources. In Article 5 Edmondson et al. draws from lessons learned from case studies, explaining that ultimately all parties in the collaborative need to have a shared vision and develop a strategy together.

(3) Literature Review

(3.2) Planning

Proper planning is fundamental to any project. The need for strategic planning was expressed throughout all the articles analyzed. The articles expressed similar reasoning behind the need for planning:

-  To ensure that there is success in implementation after the research is completed (Article 1);
-  To achieve realistic results (Article 1,3, and 5);
-  To complete the research in a timely manner (Article 3);
-  To ensure long term and future collaboration (Article 1,2,3,4, and 5); and
-  To identify particularities in the project and adapt to it (Article 2).

It is clear why long term planning is important; however, it is overlooked in some research groups, which can lead to negative effects on the projects and the overall success of the collaborative.

(3.3) Trust

Trust and communication are interrelated. Effective communication is necessary in order to build trust between partners.. Trust brings an understanding that who you are working with has your best interest in mind. Kamarudin et al. explains that “trust amongst stakeholders enhances unity transforming each action plan into innovative actions...Trust is a critical factor that supports effective communication and ability to collaborate” (page 3).

(4) Recommendations

This section is a list of recommendations tailored for the SWRC. The recommendations were based off of interviews with other research collaboratives, the SWRC Steering Committee, and relevant literature on research groups. The recommendations are organized into four main categories: Communication, Structure and Organization, Knowledge Mobilization, and Funding.

(4.1) Communication

(i) Create an accessible platform for communication within the SWRC

- Stakeholders and Steering Committee members need to be able to share and discuss ideas, research topics, and projects. This communicative platform must be easily accessible and user friendly.
- Online forum boards may require too much of stakeholders to volunteer their thoughts, initiate, or participate in a conversation. The Collaborative's website has the opportunity to develop an accessible platform for communication. Please see Appendix 2 for preliminary notes on the communication approach for the SWRC.

The Steering Committee found that one of the shortcomings of the Collaborative was that there was not a portal for information sharing. Please see page 5.

(ii) Have Steering Committee meet in person at minimum once a year

- In-person meetings allow for more focused, meaningful, and efficient engagement between members.

Interviews 1 and 4 in section 5 stated the importance of having in-person meetings. Additionally it should be noted that every research group interviewed engages in in-person meetings. Please see pages 15 and 16.

(iii) Email results of research projects to the SWRC network and post to a project section on the collaborative's website

The Steering Committee found that one of the Collaboratives shortcomings was information distribution for completed projects within the collaborative and to the general public. Please see page 5.

(4) Recommendations

(4.2) Structure and Organization

(i) Formalize the process for starting new projects

- Formalizing the process for starting projects allows for structure, clarity, and accessibility for the SWRC network to suggest new research topics.
 - Refer to Appendix 3 for a process outline and draft form, based off the existing survey form on the website.

The Steering Committee expressed that they would like to see a more structured way of initiating new projects. Please see page 6. As well interview 5 in section 5 described their method of beginning new projects and its value. Please see page 17.

(ii) Determine key areas of interest for the Steering Committee

- Prioritizing the Steering Committee's efforts on three key areas of waste research and initiating the development of new projects related to those areas creates focus, achievable goals, and structure.

The Steering Committee expressed that they would like to see more realistic goals. Please see the 3 key areas of interest on page 6.

(iii) Record the interests, affiliation, and other memberships of current and incoming participants of the SWRC

- Recording information of participants allows the Steering Committee to suggest project involvement when developing new projects and leverage existing affiliations. See Appendix 4 for an example of the information that would be recorded.

The steering committee found that one of the Collaborative's shortcomings was a lack of organizational structure. As well, the Steering Committee expressed that they would like to see a more formalized way of initializing new projects. Please see page 5 and 6.

(4) Recommendations

(iv) Hire long-term, part-time staff to coordinate administrative, organizational, and communicative aspects of the SWRC

- It is more efficient to have the same person be responsible for administrative, organizational, and communicative tasks as opposed to alternating individuals.
- Please see Appendix 5 for recommended role description

In interview 3, of section 5, it was emphasized that there needs to be an individual to ensure consistent communication with the rest of the group/network who also consistently updates the website. Please see page 16.

(4.3) Knowledge Mobilization

(i) Create a quarterly newsletter for the SWRC network

- Newsletters are a good avenue to keep communication with the Collaborative's network, distribute project results, and recruit members for projects. The newsletter should be consistent, regular (e.g., every 3 months), and should include project updates and funding opportunities . The newsletter can be completed by the long term staff member.
- If the SWRC is unable to hire a long term staff member, the Steering Committee can alternate in creating the newsletter using a template.

In interview 2 and 3, of section 5, newsletters were noted as effective means of engagement with the research groups network and fostered engagement. Please see pages 15 and 16.

(ii) Commit to regularly scheduled workshops at minimum once a year

- The workshops hosted by the SWRC have been successful, well received, and greatly expanded the SWRC network. Consistent workshops would encourage new projects, encourage greater participation and bring in new stakeholders and collaborators.
- The workshops and other SWRC hosted events should also include project update presentations.

One of the the steering committee's successes were workshops. Please see page 6. Interview 2 in section 5 stated that events hosted by the research group were very successful and an important way to engage with the network. Please see page 15.

(4) Recommendations

(iii) Diversify engagement pathways

- For the Collaborative to reach a broad audience and expose itself to more opportunities it needs to embrace in a variety of engagement forms. These forms can take shape in social media. The Collaborative should create and maintain a Twitter account, use a comment-enabled blog on their website for project communication in lieu of a discussion forum, and aim to create short engaging information videos

Interview 7 in section 5 expressed the importance of connecting to a greater audience through social media. Please see page 18. Please see Appendix 3 for communication approach.

(iv) Update and maintain the SWRC website

- For better accessibility, ensure that the SWRC is easy to navigate, includes contact information, current status and information on projects, job/research postings, and engaging content.

The Steering Committee found that one of the Collaborative's shortcomings was distributing information. Please see page 5.

(v) When initiating new projects, plan how research results will be distributed, implemented, and what implications they could have

- Better planning for what to do with the results of the research and how to distribute the information can create more opportunities for implementation.
- Develop plans for research dissemination that include key communication avenues (e.g., social media, journal or magazine publication), stakeholders and partners (e.g., municipal governments, universities, industry), etc.

The Steering Committee expressed that they would like to see the results of research projects implemented in policy. Please see page 6. Interview 1 in section 5 had a great emphasis on knowledge mobilization and the importance of sharing your results. Please see page 15.

(vi) Expand the SWRC network

- Connect with other research organizations. Other organizations may have access to resources that the Collaborative does not. Please see Appendix 6

(4) Recommendations

(4.4) Funding

(i) Consider registering the SWRC as a non profit organization

- Non-profit can often access funds that research groups cannot.
- A board of directors would be more engaged than a Steering Committee.

As a non profit there would be very clear requirements that the board of directors would need to abide to ensure structure and continuation of the Collaborative.

(ii) Communicate with university advancement offices to determine if the SWRC projects that involve post-secondary institutions qualify for funding or donations

- UBC's Development and Alumni Engagement office manages donations and major gifts for departments and specific projects. The SWRC projects that involve UBC as a partner may qualify for funding. Outreach to other post-secondary institutions in the region is advised.

(iii) Present at internship information sessions for graduate programs

- Graduate programs often have information sessions for internships where students are able to work on research projects in exchange for credits.
- Communicate with administration from graduate programs to email research positions to cohorts.

(5) Interviews with other research groups

(1) Waddell Group

Toronto, ON, Canada

The Waddell group is a thoracic surgery research lab. This lab is part of the University Health Network (UHN) in Toronto. The lab consists of 10-15 people plus rotating graduate students. Various funding avenues for the Waddell group include: grants, governmental bodies, donors, foundations, and the funding department of the UHN. They distribute their information through publications, conferences, meetings, and clinical trials. Major contributors to the success of the group are innovation, knowledge mobilization, collaboration, and communication.

The interviewee emphasized the importance of knowledge mobilization and network expansion. Having a knowledge mobilization plan is very important to the success of the project after the research has been complete. Knowledge mobilization plans should include strategies for distributing the research findings. The Waddell Group believes that the more you put out, the more you will receive and successful knowledge mobilization not only opens implementation opportunities for the project, but expands the group's network research opportunities. Additionally, the interviewee expressed the importance of in-person meetings.

(2) Canada's Waste Flow Research Program

Kingston, ON, Canada

Canada's Waste Flow Research Program is a collaborative waste research group centered at Queen's University. The lead researcher is professor Myra Hird. The group consists of 6 graduate students and Myra Hird. Funding for projects is mainly obtained through grants. Information distribution is usually done through academic publications. Certain projects have presentations for those involved in a less academic setting. Continuous funding aids the success of the group; however, there is no guarantee that it will always be there. This research group is open to working with other research groups.

The interviewee emphasized that constant engagement and activity is vital to a success of a research group. Having newsletters with engaging content, workshops and meetups solidifies the research group and opens opportunities. They have also found that developing and delivering update presentations or workshops on certain projects to be very successful and well received.

(5) Interviews with other research groups

(3) Canada's Waste Network

Kingston, ON, Canada

Canada's Waste Network is a website that seeks to connect researchers in Canada working on issues relating to waste, and maintains a blog on current issues and projects related to waste. The network was initiated by the same individuals who initiated Canada's Waste Flow Program. Research groups are able to join the network and become a member, but since there is no obligation from members to contribute, engagement is low as a result.. One of the biggest challenges for the network is engagement. Originally, newsletters were distributed consistently; however, that has slowed and as a result engagement has decreased.

The interviewee emphasized a need for an individual to consistently be sending emails, providing content, writing newsletters, and updating emails. They explained that when there was a web forum for researchers to provide content and engage in discussion, engagement was still low as it was requiring too much from individuals. Engagement is higher when content is being pushed by the network.

(4) WaSTE: Waste and Science, Technology & Environment

St. John's, NL, Canada

WaSTE is a group of researchers from various disciplines who are experts in waste in some variation. WaSTE is based out of the Memorial University of Newfoundland. The group consists of 5 faculty members and 2-3 graduate students. Funding is mainly obtained through grants, and information is distributed through emails. Some challenges the group is facing is funding, graduate retention, and turning research into policy. This group attributes its success to its informal setting. There are no goals or timelines; however, you do need to complete required readings before each meeting and engage in discussion. The group acts as a support to those members engaged in projects. This research group is open to working with other research groups.

The interviewer explained that the discussions during meetings greatly encouraged and supported existing projects and research.

(5) Interviews with other research groups

(5) Centre for Waste Management

Preston, United Kingdom

The Centre for Waste Management (CWM) is a university research group and consultancy that looks at solid waste management, based out of the University of Central Lancashire. CWM consists of 6 core group members, but the group generally consists of 6-10 people depending on the projects. CWM obtains funding from the European Union (EU), as well as grants. Information is distributed through newsletters, publications in journals and magazines, presentations at local and national events, and conferences. CWM also hosts workshops, training events, conferences, and social meetings with stakeholders once a year. CWM's biggest challenge is funding. The funding received from the EU is on hold due the uncertainty of UK's future membership in the EU. Additionally, funds from private organizations often take time to organize due to economic uncertainties. CWM attributes its success to having developed a strong and diverse network. This group is open to working with other research groups.

The interviewee emphasized the importance of having a strong diverse network of stakeholders for a research group. Additionally, they spoke in depth regarding the formal process of beginning new projects: first they decide if they would like to engage in the project, then they determine what they would gain from the project, members are then allocated to the project, and lastly they determine if they need additional resources or people for the project.

(6) University Health Network - Major Gift Department

Toronto, ON, Canada

The major gifts department of the University Health Network (UHN) is in charge of fundraising strategies, establishing very personalized relationships with donors, and working with clinical programs to raise money. In 2015, the UHN was able to raise over \$400,000,000. The major gifts department has very specialized methods of information sharing and engaging donors. There is very tailored reporting when updating donors on projects. Donors are generally very closely connected to the program that they are funding and communicate with the researchers.

The interviewee emphasized that information distribution is very important and tailoring communication to specific audiences creates larger responses and increased feedback.

(5) Interviews with other research groups

(7) Centre for Policy Research

New Delhi, India

The Centre for Policy Research (CPR) is a public policy research institute that studies law and governance, climate change policy, water, economics, and international relations history. CPR has 100+ members, staff, and visiting fellows and professionals. CPR gets the majority of its funding from grants and some funding from the government. Information is distributed through social media, newsletters, journal publications, books written by researchers, and conversations with ministers. CPR was originally created by retired bureaucrats, and as a result they now have ties to government officials. Due to CPR's prestige many researchers, graduates, and professionals worldwide apply to volunteer to be a visiting researcher for the group, reducing some of the funding necessity.

The interviewee stressed the importance of information distribution through informal means such as social media. Over the last 2 years CPR has begun expanding their communications department and the methods of distributing information beyond the academic setting. CPR has received significant responses as a result, and more of the general public is now able to access and understand their research.

(6) Appendix 1 - Funding Opportunities

APPLICATION	Environmental Research & Education Foundation (EREF) <p>Ensure research funded reflects EREF's long-term strategic plan to address all areas of integrated solid waste management, with a strong focus towards research that increased sustainable solid waste management practices.</p>	ISWA Project Grant <p>The Project Grant provides a means for ISWA to promote global advancement in sustainable waste management by selectively funding projects that most effectively contribute to the strategic priority areas set by ISWA.</p>	TD Friends of the Environment Foundation <p>The foundation is committed to environmental protection and conservation.</p>	EcoAction Community Funding Program <p>This program provides financial support to community-based, non-profit organizations for projects that have measurable, positive impacts on the environment.</p>
DEAD LINE	January 6th & June 1st	TBD	February 15, 2016 July 15th 2016	November 1st
FUNDING	USD \$15,000 - \$500,000 +	50,000 Euros	No set minimum or maximum Average: CAD \$4000	CAD \$100,000
TOPICS	<ul style="list-style-type: none"> - Waste minimization - Recycling - Waste conversion to energy, biofuels, chemicals or other useful products - Waste-to-energy, Anaerobic digestion - Composting, Other thermal or biological conversion technologies - Strategies to promote diversion to higher and better uses 	<ul style="list-style-type: none"> - Waste 	<ul style="list-style-type: none"> - Community Gardens - Environmental Education Projects - Outdoor Classrooms - Recycling/Composting Programs - Energy Conservation/Renewable Energy 	<ul style="list-style-type: none"> - Projects with a focus on reducing greenhouse gas emissions or with a focus on addressing the impacts of climate change <p>For example: sustainable consumption and waste reduction activities cooling measures to reduce urban heat islands</p>
GUIDELINES	<ul style="list-style-type: none"> - Pre-proposals are required prior to submitting a full proposal using the set pre- proposal template - Pre-proposals will be examined by a selection committee and successful pre-proposals will be invited to submit a full proposal for consideration. - Proposals will be accepted from non-academic institutions provided the principal - Investigators are qualified to conduct the research 	<ul style="list-style-type: none"> - SWA Regional Development Networks, National Members, Working Groups and Task Forces can apply for the fund 	<ul style="list-style-type: none"> - Educational institutions (post-secondary) and Municipalities can apply - Do not fund Internal or external salaries or other people-costs where they make up more than 50% of the amount requested (includes web design, graphic design, writers, translation, labour, etc.) 	<ul style="list-style-type: none"> - Non-profit organizations are eligible to apply including: environmental groups, community groups, youth and seniors groups, community-based associations, service clubs - Maximum duration of a project is 36 months - Organizations must secure at least half of the total project funding from sources other than the federal government - Organizations must be able to measure the direct positive environmental results of the project
WEBSITE	https://erefdn.org/research-grants-projects/how-to-apply-for-grant/	http://www.iswa.org/programmes/iswa-project-grant/	https://fef.td.com/funding/	https://www.ec.gc.ca/finance-funding/default.asp?lang=En&n=923047A0-1#_06

(6) Appendix 1 - Funding Opportunities

APPLICATION	Muskoka Summit on the Environment (MSE) Research Grant The purpose of the MSE Research Grant is to support graduate student environmental research within the Muskoka River Watershed, in the fields of environmental science, resource studies and/or policy.	Senior Fellows Program - Max Bell Foundation Max Bell Foundation's Senior Fellows Program provides opportunities for experienced professionals to devote a substantial portion of time to engage in research, writing, and educating the public.	Major Science Initiatives Fund This fund contribute to the ongoing operations and maintenance needs of national research facilities for which the loss or absence of support would represent a serious setback for Canada.	Innovations Fund This fund challenges institutions to propose transformative infrastructure projects that will underpin cutting-edge, globally competitive research.
DEAD LINE	February 26	Rolling Deadline	December 21st	June 23rd
FUNDING	\$7,500	\$100,000	\$400 million over five years 40% of operating and maintenance	\$425 million in infrastructure costs 40% of infrastructure costs
TOPICS	<ul style="list-style-type: none"> - Research on aquatic, terrestrial, and atmospheric environments 	<ul style="list-style-type: none"> - The overall goal of the program is to add value to debates over critical public policy issues in health and wellness, education, and/or environment. 	<ul style="list-style-type: none"> - Secure and strengthen facilities to ensure that Canadian researchers can undertake world-class research and technology development that lead to social, health, economic, or environmental benefits to Canadians. 	<ul style="list-style-type: none"> - Generate social, health, environmental and/or economic benefits for Canadians, including better training and improved skills for highly qualified personnel, through appropriate pathways
GUIDELINES	<ul style="list-style-type: none"> - Applications done by student accepted or currently enrolled in a graduate program related to environmental science, resource studies and/or policy - Funds must be used to support graduate student research activities within the Muskoka region 	<ul style="list-style-type: none"> - Initiate the process by sending a short letter to the Foundation. The Foundation will review your Letter of Intent and contact you to follow up - Candidates must be Canadian residents or eligible for retention in keeping with Canadian charitable law - Candidates must agree that during their term as a Senior Fellow, they will have no other employment duties, and will devote a block of contiguous time to the Fellowship project 	<ul style="list-style-type: none"> - Canadian universities, colleges, research hospitals and non-profit research institutions recognized as eligible by the CFI can apply to this competition 	<ul style="list-style-type: none"> - Canadian universities, colleges, research hospitals and non-profit research institutions recognized as eligible by the CFI can apply to this competition - Will only consider proposals whose total project costs are greater than \$750,000 (2016 application)
WEBSITE	http://muskokasummit.org/mse-research-grant/	http://www.maxbell.org/senior-fellows-program	https://www.innovation.ca/en/OurFunds/CFIFunds/major-science-initiatives-fund	https://www.innovation.ca/en/OurFunds/CFIFunds/innovation-fund

(6) Appendix 1 - Funding Opportunities

APPLICATION	The Sustainable Development (SD) Fund Supports cleantech projects that address climate change, air quality, clean water and clean soil.	Waste Reduction and Pollution Prevention (WRAPP) Fund - Manitoba Supports projects that focus on waste reduction, pollution prevention, and integrated waste management practices. The WRAPP Fund is a broad allocation of the Sustainable Development Innovations Fund (SDIF).	Strategic Priorities fund Available to local governments and other recipients outside of the Greater Vancouver Regional District to support infrastructure and capacity building projects that are either larger in scale, regional in impact or innovative, and align with the program objectives of productivity and economic growth, a clean environment and strong cities.	Green Municipal Fund - Feasibility Studies and Pilot Projects Finances feasibility studies and pilot projects to support sustainable community development.
DEAD LINE	Rolling Deadline: 613-234-6313	April/ June/ October 15	TBD	Rolling Deadline Review process: February & September
FUNDING	\$300,000 - 15,000,000	\$25,000	TBD	50% of eligible costs: \$175,000 for feasibility studies \$350,000 for pilot projects.
TOPICS	<ul style="list-style-type: none"> - Technologies for the sustainable development of mineral resources, including those that increase productivity and reduce energy consumption, and those that minimize land disturbance and waste production. 	<ul style="list-style-type: none"> - Organic Waste Management and Composting - Construction and Demolition (C&D) Waste Management - Model Integrated Waste Management System Development and Planning 	<ul style="list-style-type: none"> - Solid Waste 	<ul style="list-style-type: none"> - Waste diversion projects
GUIDELINES	<ul style="list-style-type: none"> - Concept but not yet commercial (Technology Readiness Level 3-7). Real world demonstration or prove it out at a pilot scale. - SDTC typically funds 1/3 (there is some flexibility in the ratio) of the total eligible project costs. You and your partners must be able to co-fund the other 2/3 of the project costs from other sources of funds. SDTC allows up to 75% government funding (all levels) in total. SDTC allows in-kind contributions from project partners - 1 and 5 years in duration 	<ul style="list-style-type: none"> - Municipal corporations, local governments, private and non-profit organizations and businesses, educational institutions, youth groups and community associations are eligible to submit project proposals. - Conduct project activities in Manitoba or be of benefit to Manitoba 	<ul style="list-style-type: none"> - Under development by the Strategic Priorities fund 	<ul style="list-style-type: none"> - Cities, counties, and regions can apply - Waste diversion projects - For most municipalities, projects must demonstrate the potential to divert at least 60% of municipal solid waste from landfill to be eligible for funding. If your municipality has already achieved a total diversion rate of at least 60%, your project must demonstrate the potential to result in an incremental improvement above 60%.
WEBSITE	https://www.sdte.ca/en/about-sdte/funds	https://www.gov.mb.ca/conservation/pollutionprevention/wrapp/wrappfund.html	http://www.ubcm.ca/EN/main/funding/renewed-gas-tax-agreement/strategic-priorities-fund.html	http://www.fcm.ca/home/programs/green-municipal-fund/what-we-fund/projects/waste-funding.htm

(6) Appendix 1 - Funding Opportunities

APPLICATION	NSERC Connect Grants Provide targeted financial support to encourage post-secondary researchers at universities and/or colleges to connect with industry and other knowledge end-user communities in order to form new partnerships.	NSERC Engage Grants Engage Grants are designed to give innovative companies that operate from a Canadian base access to the unique knowledge, expertise and capabilities available at Canadian universities and colleges.
DEAD LINE	Rolling Deadline: apply 12 weeks in advance of project	Rolling deadline
FUNDING	\$5000 - 25,000	\$25,000 for 6 months
TOPICS	<ul style="list-style-type: none"> - Forming new partnerships in natural sciences or engineering research with Canadian companies 	<ul style="list-style-type: none"> - The mutually beneficial collaborations are expected to result in economic benefits to the company and to Canada - Generate new knowledge or apply existing knowledge in an innovative manner in order to solve a company-specific problem. - Commercialization of a university or college invention
GUIDELINES	<ul style="list-style-type: none"> - Funding for travel costs - Funding for non-recurring, regionally oriented activities or events - Funding for non-recurring, nationally oriented research planning workshops 	<ul style="list-style-type: none"> - Applicant must be a university or college - Partner organization must have a minimum of two full-time employees and have been in operation for 2 years - Project timeline starts on 1st of the month following application approval
WEBSITE	http://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/Connect-Connexion_eng.asp	http://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/Engage-Engagement_eng.asp

(6) Appendix 2 - Communication Approach

Website

As a platform for collaboration, the Collaborative’s website is highly important for outgoing communications, and to a lesser extent for facilitating incoming conversations.

The Collaborative’s website is undergoing review and updating. The table below summarizes the current websites functionalities, and the expanded functionalities which the new site will provide.

Current website functionality and suggested new functionalities	
Current functionality	New functionality
About FAQ (homepage) Survey form for new ideas	About, incorporating FAQ Project profiles (blog format, comments enabled*) Suggest a project (online form) Participant profiles, (incl. areas of interest, project involvement, contact details) Newsletter archive (blog format) Event Calendar Coordinator contact details

**Enabling comments on the blog will provide a trackable forum for dialogue, but will also require monitoring for spam.*

Fostering dialogue

Online discussion forums had their heyday in the 1990s and early 2000’s. In the past several years, forum traffic has steadily moved to micro-blogging platforms and social media. Internet users no longer need to sign up for forums to have their voices heard, and it is both difficult and time consuming to create a lively forum from scratch in 2016, and requires ongoing maintenance.

Given this, the Collaborative is not recommended to cultivate an online discussion forum and should instead focus on building the physical network while learning about and capitalizing on existing online conversation platforms. The easiest to access and use, although also the most limited, (140 characters) is Twitter.

Longer term, as the Collaborative gains capacity and investment, it should look at developing a group on LinkedIn and hosting a page on Facebook. The former will draw in professional engagement and provide access to a wider audience for research results, while the latter will heighten visibility.

Collaboration technology / online and app-based platforms

Participants in the collaborative have a variety of levels of experience with research, and especially industry/academic collaborative research. With the advent of high-technology online collaboration tools and platforms, the Collaborative could potentially benefit its participants by gathering and sharing information on the use of such apps for collaborative research.

This recommendation is dependent on assessing with participants if there is an appetite for more information on how to adopt and implement collaboration platforms. Popular examples include:

- Slack
- Asana
- Smartsheet (Gantt-style project management)

A crucial note is that the privacy policies of these platforms may not always reflect the research partners’ needs.

(6) Appendix 3 - Draft Project Form/ Idea Proposal

Draft Form: Logging New Participants / New Research Proposals

1. Please select your interest in the Research Collaborative:

- Be kept apprised of the Collaborative's activities via quarterly newsletters and event invitations
- Serve on steering committee
- Propose a new research idea
- Sharing existing research project

2. Your details:

Name:

Phone:

Email:

Website:

Skills and interests:

Would you like to be profiled with these details on the Collaborative's web page?

- Yes
- No

Please indicate any details you would want excluded from an online profile:

3. Research Idea Proposal

You are a...

- Academic partner
- Industry partner

Title for Research:

Description:

Goals: (1-3)

Potential or existing partners:

(6) Appendix 3 - Draft Project Form/ Idea Proposal

New Project Proposal Process:

1. Participants will propose ideas through through any of these channels:
 - a. Phoning or emailing the Coordinator directly
 - b. Filling in an online form on the Collaborative website
 - c. In-person at roundtables and networking events
 - d. (Recommended for future development) Over twitter
2. Coordinator will format idea into set template, contacting the idea host as needed to flesh out details (especially relevant for ideas shared through Twitter).
3. Coordinator will post idea on website via blog and in next newsletter
4. Coordinator will shepherd idea and serve idea host by:
 - a. Brokering introductions as potential alliances emerge from analyzing the participant database
 - b. Sharing relevant funding opportunities for the topic area

Core materials to develop and maintain in support of project initiation:

1. Review, edit and approve new participant / idea proposal form at the steering committee level
2. Develop existing 'member list' into participant database including contact details, research interests and skills
3. Adapt existing .doc project listing into a spreadsheet database with sheets for past & active projects and ideas
4. Develop funding database including target topic area, industry contribution requirements, maximum funding amount

(6) Appendix 4 - Participant Database

Here is a sample of suggested column headings for the participant database.

First name	Last name	Industry/Academic	Membership affiliations	Interest	Email
Shirin	Karoubi	Academic	UBC/SCARP	C&D	shirin.karoubi@utoronto.ca

(6) Appendix 5 - Role Description

Recommended Roles of SWRC Coordinator

- Scheduling quarterly steering committee calls
- Generating quarterly newsletters following a predetermined template
- Planning and executing at least 3 roundtable discussions per year, with general or specific topics
- Maintain databases
 - Maintain database of past and current research projects
 - Maintain funding opportunity database
 - Maintain a participant database
- Receive and process (i.e. post/share) new research ideas
- Identify emerging research areas and gauge participant interest
- Developing new outreach pathways e.g. webinars
- Assist in website updates as required
- Communicate with various graduate program's administration to advertise research positions

(6) Appendix 6 - Contacts for Other Organizations

ORGANIZATION	CONTACT PERSON	CONTACT INFO
Canada's Waste Flow Research Program	Scott Lougheed	lougheed.scott@queensu.ca
Canada's Waste Network	Scott Lougheed	lougheed.scott@queensu.ca
WaSTE: Waste and Science, Technology & Environment	Max Liboiron	mliwoiron@mun.ca
Centre for Waste Management	Karl Williams	kswilliams@uclan.ac.uk