	Social Sciences and Humanities Research Council of Canada	Conseil de recherches en sciences humaines du Canada

Application for a Grant

Identification

This page will be made available to selection committee members and external assessors.

Funding opportunity	Funding Stream
Insight Grants	B ($100,001 to $400,000)

Joint or special initiative

Application title

Realizing a carbon neutral economy: A new governance framework

Applicant family name	Applicant given name	Initials
Dale	Ann	

Org. code	Full name of applicant's organization and department
1591211	Royal Roads University School of Environment and Sustainability

Org. code	Full name of administrative organization and department
1591211	Royal Roads University Office of Research Services

Preferred Adjudication Committee

435-09

	Yes	No
Does your proposal require a multi/interdisciplinary evaluation?	◯	◉
Is this a research-creation project?	◯	◉
Does your proposal involve Indigenous Research as defined by SSHRC?	◯	◉
Does your proposal involve human beings as research subjects? If "Yes", consult the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* and submit your proposal to your organization's Research Ethics Board.	◉	◯
Will any phase of the proposed research take place outdoors?	◯	◉
A. Will any phase of the proposed research take place on federal lands in Canada, other than lands under the administration and control of the Commissioner of Yukon, the Northwest Territories or Nunavut, as interpreted in section 2 of the Impact Assessment Act (IAA)?	◯	◉
B. Will any phase of the proposed research take place in a country other than Canada?	◯	◉
C. Will the grant permit a designated project (listed in the Physical Activities Regulations) to be carried out in whole or in part?	◯	◉
D. Will any phase of the proposed research activities depend on a designated project (listed in the Physical Activities Regulations) being led and carried out by an organization other than SSHRC?	◯	◉

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total funds requested from SSHRC	65,287	91,613	85,853	67,799	0	310,552

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Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Family name, Given name
Dale, Ann

Participants

List names of your team members (co-applicants and collaborators) who will take part in the intellectual direction of the research. Do not include assistants, students or consultants.

Role	
Co-applicant ●	Collaborator ○

Family name	Given name	Initials
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Org. code	Full organization name
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Department/Division name
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Role	
Co-applicant ●	Collaborator ○

Family name	Given name	Initials
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1591211	Royal Roads University

Department/Division name
School of Environment and Sustainability

Role	
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Role	
Co-applicant ○	Collaborator ●

Family name	Given name	Initials
Brousselle	Astrid	

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Department/Division name
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Role	
Co-applicant ○	Collaborator ●

Family name	Given name	Initials
Brunet-Jailly	Emmanuel	

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Department/Division name
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Family name, Given name

Dale, Ann

Participants (cont'd)

Role
Co-applicant ◉   Collaborator ◯

Family name	Given name	Initials
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Org. code	Full organization name
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Department/Division name
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Role
Co-applicant ◉   Collaborator ◯

Family name	Given name	Initials
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Department/Division name
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Role
Co-applicant ◯   Collaborator ◉

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Org. code	Full organization name
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Department/Division name
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Role
Co-applicant ◯   Collaborator ◉

Family name	Given name	Initials
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Org. code	Full organization name
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Department/Division name
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Role
Co-applicant ◯   Collaborator ◉

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Homer-Dixon	Thomas	F

Org. code	Full organization name
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Department/Division name
Faculty of Environment

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Research Activity

The information provided in this section refers to your research proposal.

Keywords

List keywords that best describe your proposed research or research activity. Separate keywords with a semicolon.

governance; climate change adaptation and mitigation; carbon neutral economy; public administration

Disciplines - Indicate and rank up to 3 disciplines that best correspond to your activity.

Rank	Code	Discipline	If "Other", specify
1	70000	Interdisciplinary Studies	
2	62600	Management, Business, Administrative Studies	
3	61800	Geography	

Areas of Research

Indicate and rank up to 3 areas of research related to your proposal.

Rank	Code	Area
1	180	Environment and Sustainability
2	320	Politics and government
3	290	Management

Temporal Periods

If applicable, indicate up to 2 historical periods covered by your proposal.

From	To
Year BC AD	Year BC AD
——— ◯ ◯	——— ◯ ◯
——— ◯ ◯	——— ◯ ◯

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Family name, Given name
Dale, Ann

Research Activity (cont'd)

Geographical Regions
If applicable, indicate and rank up to 3 geographical regions covered by or related to your proposal. Duplicate entries are not permitted.

Rank	Code	Region
1	1110	Atlantic Provinces
2	1120	Central Canada
3	1130	Western Canada

Countries
If applicable, indicate and rank up to 5 countries covered by or related to your proposal. Duplicate entries are not permitted.

Rank	Code	Country	Prov./ State
1	1100	CANADA	
2			
3			
4			
5			

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Dale, Ann

Response to Previous Critiques - maximum one page
Applicants may, if they wish, address criticisms and suggestions offered by adjudication committees and external assessors who have reviewed previous applications.

While we recognize that this is a broad and ambitious program of research, we believe the team has the necessary expertise in their respective domains, in some cases praxis, and interdisciplinary skills necessary to successfully achieve the stated outcomes. We have sharpened our research question to state that our focus is exclusively on Canada and Canadian responses to the selected case studies. In the beginning program description, we have elaborated on the conflictual and contested nature of implementing a carbon neutral economy in Canada. For this reason, we also selected three time points for implementation, 2030, 2040 and 2050, given the lack of consensus on the urgency and scale of actions that are required. The external critique was most helpful in determining the necessity for three time points.

We have identified the theoretical frameworks we will be using for the research project, namely, social-ecological theory, systems theory, socio-ecological transitions, polycentric, adaptive, multi-level perspective and multi-level governance. Although we are drawing on diverse theoretical frameworks, we believe the interdisciplinary expertise of the team is capable of the critical integration and synthesis necessary. We have also identified that we will be using Voss and Bornemann's three overlapping classifications (policy, polity and politics) for analyzing the case studies. We have also clarified that our analysis will use the following evidence criteria--- coalition-building, strategic partnerships, regime formation, a priori network formation, diversity and scale of actors, number of institutions and policy instruments coordinated to get action, nature of institutions---vertical, horizontal, boundary spanning, policy coherence and alignment within and between, and quasi-institutional intermediaries, inter alia.

Additional literature has consequently been added to the proposal, most importantly that of the public administration literature upon which we will be drawing.

We have expanded on the rationale for the case study selections and provided greater clarity on how the four frameworks will be analyzed and used for the case study research. They will be integrated building upon public administration and policy frameworks to develop a working governance framework. The MC3 database will be used to draw out any interviewee observations on critical government changes that are necessary to build the interview protocol. The case study data will be used to refine the earlier working governance framework. The focus groups and learning exchanges are critical to determining the feasibility of the proposed governance framework and further revisions will be undertaken, culminating in an action agenda for decision-makers.

To clarify our methods, we have refined the table at the end of the detailed description.

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Dale, Ann

Summary of Proposal

The summary of your research proposal should indicate clearly the problem or issue to be addressed, the potential contribution of the research both in terms of the advancement of knowledge and of the wider social benefit, etc.

Reports from the Intergovernmental Panel on Climate Change (IPCC, 2018) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services Global Report on Biodiversity and Ecosystem Services (2019) have issued alarming warnings about the continuing viability of human systems. The former warns that unless we limit our greenhouse gas warming to 1.5 degrees in 12 years, we will face catastrophic collapse. The panel states that avoiding collapse requires transforming the world economy at a speed and scale that has no documented historic precedent. They warn that we are now at the stage where this will only happen with political will. The biodiversity report warns that nature is in its worst shape in human history and we are facing accelerating species loss at a rate ten of hundreds of times faster than in the past. Both reports show climate pollution and biodiversity loss represent two of the most critical imperatives of modern society. It is no longer about creating enabling conditions for change but rather, intentionally leading the necessary changes and deliberatively intervening in current development paths.

This research builds on a 7-year climate change adaptation and mitigation project that examined local climate action initiatives in 11 community case studies in BC. Our research identified the critical role that multi-level governance can play in transformative change in current development paths and identified the need to embed new institutional arrangements into existing government systems to avoid back-sliding with changes in political leadership. A dramatic example is the federal climate plan, the Canadian Framework on Clean Growth and Climate Change, well received by critics and the provinces, but since then, with electoral changes, four provinces have fought the federal government on implementing a carbon tax, though the majority of economists and climate scientists have argued it is one of the most efficient ways to change societal and economic behavioural paths. Given the reports, we argue that the desired transformation of current development paths to a carbon neutral economy must be dramatically accelerated; this can only happen by fundamental transformation of Canada's current government arrangements to a coordinated, multi-level governance model, which engages and coordinates governments at all levels, and civil society.

The goal is to explore what new multi-level governance arrangements must be instituted in Canada to move to a carbon neutral society by 2030, 2040 and 2050. Our research question is: What are the governance and complementary institutional arrangements that need to be put in place in Canada to realize a carbon neutral economy by 2050, recognizing that achieving this goal will involve working across levels of government and with the for-profit, non-profit and community sectors? Objectives are to: synthesize and adapt scholarly governance frameworks; develop and analyze case studies on responses to global crises; assess Canada's climate actions & sustainability strategies; determine needed governance & institutional capacities; develop a framework for monitoring progress; and mobilize knowledge.

We will analyze cases where Canadian governments have responded to pressing environmental, security and public health challenges with government and non-government partners. The research will link and ground proposed governance innovations with concrete practices and possibilities of public administration: 'machinery of government' considerations, coordinating mechanisms and strategies with and across governments, and a multi-faceted portfolio of policy instruments. We will identify policy and institutional changes to be made by 2030 and 2040 and alternative development paths.

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Program of Research

Two international reports, the Intergovernmental Panel on Climate Change (IPCC, 2018) and the IPBES Global Report on Biodiversity and Ecosystem Services (2019), have issued dire warnings about the continuing viability of human systems. The former warns that humans have a decade to limit warming to 1.5 °C above pre-industrial levels to avoid catastrophic impacts to humans and the biosphere. It warns we need to dramatically accelerate the scale and pace of change, as well as the uptake of climate innovations worldwide. A recent paper in *Nature* shows that we have little chance of preventing more than 1.5C of global heating unless we retire existing fossil fuel infrastructure (Tong et al., 2019). To achieve transformations of the scale, magnitude, speed, and penetration required, we need unprecedented political agency, which "in the context of climate change refers to the capacity to positively influence the collective future through transformative change", encompassing both individual and collective change (O'Brien, 2015).

Despite repeated IPCC warnings, governments have only adopted incremental development path change – very little structural change has occurred as GHG emissions have continued to increase (Jost et al, 2020a; Steffen et al., 2015; Rockstrom et al., 2009). Two specific Canadian examples are the failure to implement the 2019 *Pan-Canadian Framework on Clean Growth and Climate Change* and the seminal report, *Re-Energizing Canada, Pathways to a Low-Carbon Future* (Potvin et al., 2017). The latter, prepared by over 85 Canadian scientists, is a detailed roadmap for achieving a national renewable energy system by 2050, and has yet to be discussed within government, let alone implemented. The lack of consensus by the provinces on implementing a carbon tax is also a cause for concern, despite most economists and climate scientists arguing it is one of the most efficient ways to change current behavioural paths (Dahlby, 2019; The Economist May 20th, 2020). Similarly, the 2019 IPBES report warns that nature is in its worse shape in human history, with accelerating species loss at a rate of ten to hundreds of times faster than in the past. This is further complicated by recent evidence from the COVID-19 pandemic that encroaching human interactions with wildlife populations will only increase the probability of further global pandemics (Settele et al., 2020; Uren, 2019). The intersection between climate change, biodiversity conservation, and human health is now very clear as is the need for governments to deliberatively intervene in current development paths for transformative change (Dale & Potvin, 2016).

This research builds on a seven-year climate change project, which examined local climate action using 11 community case studies in British Columbia (MC[3]: Meeting the Climate Change Challenge). This research examined the drivers and barriers to local climate action and innovation as well as exploring the nature of change (incremental, transitional, transformative) associated with different development paths to identify how local governments could accelerate climate innovation (Jost et al., 2020b). MC[3] research identified the critical role that multi-level governance can play in transforming current development paths (Dale et al., 2019). Research further identified the need to institutionalize/embed new institutional arrangements into government systems to avoid back sliding with changes in political administrations (Dale et al., 2015).

Two seminal science reports produced by the Sustainable Dialogues consortium conclusively state that achieving a carbon-neutral economy in Canada is both necessary and feasible by 2050 (2014; 2017). Canada's current development paths must be shifted to meet carbon-neutral goals, which can only happen with a distinctly different policy mix and a fundamental transformation of governments to governance. Our overarching research question is: What are the governance and complementary institutional arrangements that need to be put in place in Canada to realize a carbon neutral economy by 2050, recognizing that achieving this goal will involve working across levels of government and with the for-profit, non-profit and community sectors? We propose to identify policy and institutional changes which need to be made by the years 2030 and 2040, key junctures along the way to the year 2050, along with alternative development paths.

Objectives

This proposed research will investigate and contribute to new models of governance through the following.

1. **Synthesize and adapt scholarly governance frameworks for Canada**. Several frameworks for guiding sustainability and climate-action responses have circulated for two decades: Ostrom's (2010) polycentric governance model; Walters & Holling's (1990) adaptive management model; and most recently, the multi-level (Geels, 2011) and multi-level governance (Bates et al., 2013) perspectives. Each has interesting research questions and theoretical features, but they will be integrated to show their differences and more concretely elaborated to reflect real-world policy and governance contexts.

2. **Develop and analyze detailed case studies on responses to global crises**. Building upon our framework for evaluating development path change as incremental, reformative, or transformative (Moore et al., 2018), we will develop and analyze several case studies about how governments and civil society movements have responded to global crises. These will identify common dynamics of resistance, active leadership, critical intervention points and cross-cutting horizontal strategies and capacity emerged. This will lead to an analytic framework that will identify the gaps in existing institutional arrangements in Canada and tipping points to accelerating development path changes.

3. **Assess Canada's climate actions & sustainability strategies**. The analytic framework developed above will be used to guide a review of the drivers and barriers associated with the Pan-Canadian Framework on Clean Growth and Climate Change (2019) and the research of Sustainable Canada Dialogues network (2014; 2017). The objectives here are to identify: (1) aspirational goals have not been accompanied by sufficiently concrete objectives; (2) needed policy instruments and which governments wield them; (3) the extent to which the policy mixes associated with different pathways need to be aligned (e.g. a recent report issued by the Global Studies Initiative claims that a subsidy swap could make the clean energy revolution possible and save taxpayers' money for other priorities, such as funding adaptation priorities (IISD, 2019).); and (4) what kinds of coordination will be required across governments and other sectors in order to productively use those policy mixes.

4. **Determine needed governance & institutional capacities**. With different policy mixes and pathways identified (Howlett, 2020; Lindquist & Wanna, 2015), this phase will focus on what new institutional and coordinating capabilities will be required (Desveauz et al., 1994) and what new capabilities and governance arrangements must be developed to put Canada on carbon-neutral development paths by 2050, and the 2030 and 2040 intervention points. We will determine the degrees of consensus or 'buy-in' that will be required among practitioners, civil society leaders and government policymakers to move forward with sufficiently urgent and transformative change by 2030, 2040, and 2050.

5. **Develop a framework for monitoring progress.** Transformational change is not without risk; it has long been understood that monitoring the implementation of policy regimes and outcomes against aspirations are essential for learning, adaptation, and correction, especially in polycentric, or multi-level government and multi-sector contexts (Bouckaert & Halligan, 2009; Lindquist & Wanna, 2015). This phase of the project will outline principles and considerations for a performance monitoring framework.

6. **Knowledge mobilization**. This project will rely on knowledge mobilization in its 'upstream' and 'downstream' to develop and share findings. In the upstream it will rely heavily on case studies, focus groups, and workshops not only to generate and review findings and insights but also to develop frameworks for analysis and to guide interventions. Once the project is completed, there will follow a string of publications, events, communication, etc. Table 1 details the 'upstream' steps, while the *Knowledge Mobilization* section provide details on the "downstream" activities.

Research Context

We draw upon several theoretical frameworks from social-ecological theory; systems theory; socio-technical transitions; polycentric, adaptive, multi-level perspective, and multi-level governance. We will also be using the framework proposed by Voss and Bornemann (2011) to interrogate our case study data.

First, Rockstrom's research indicates that we have now surpassed four of seven critical planetary boundaries, and that exceeding these could lead to rapidly increasing risks of catastrophic and irreversible environmental change (Steffen et al., 2015). We focus, therefore, on identifying new governance structures for responding to these risks. Second, since climate change presents as a messy, wicked problem (Levin et al., 2012), with social complexity and weak institutionalization, its resolution necessitates the need for governance as a shared responsibility of representatives from the state, the market, and civil society (van Zeiji-Rozema et al. 2007). Third, we realize the importance of social-ecological and systems theories (Moore et al., 2018) for informing any governance framework. Fourth, given the plurality of interests essentially implicated and their associated power and conflict dynamics, equal emphasis must be put on processes as well as institutional structures, roles, and relationships. Fifth, the embedding of climate innovations "in practice, routine and cultural norms in both regime institutions and public collectives" (Williams & Robinson, 2020) is crucial to development path transformation.

Governments at all levels must now concertedly intervene in current development paths if we are to realize transformative change. The IPCC defines a development path as "a complex array of technological, economic, social, institutional, cultural and biophysical characteristics that determines the interactions between human and natural systems, including consumption and production patterns in all countries, over time at a particular scale" (IPCC 2007: 696). They exhibit a particular set of interlinking regime rules and behaviours, including inertia and cascading effects over time, and they are reinforced at multiple levels, with varied capacities and constraints on local agency occurring at each level (Burch et al., 2014; Shaw, 2014). It is the underlying development path that yields current emissions trajectories and vulnerabilities (Cohen et al., 1998; Robinson et al., 2006); it is these paths which must change in order to reach the ambitious goals of carbon neutrality and sustainable community development. Our research will focus on what tipping points, interventions, and policy mixes will be the most effective.

Previous MC^3 research demonstrates the benefits that can result from a multi-level governance approach to climate action between two levels of government, in partnership with numerous civil society groups and researchers (Burch et al., 2014; Shaw et al., 2014; Dale et al., 2013; Dale, 2015; Dale et al, 2017; Dale et al., 2019). Although many local innovations are happening, our case studies continued to place importance on other levels of government leadership to accelerate local innovation — including proactive legislation; innovative policy instruments; financial incentives; policy instruments; tools; and ongoing measurement and reporting (Dale, 2015; Moore et al. 2018). The greatest potential for accelerating shifts in current development paths occur when all levels of government are working congruently with one another, coupled with internal alignment within and across each level of government (Dale et al. 2018; 2017).

Integrated strategies for landscape, land use, transportation, and energy infrastructure planning at multiple scales is also a critical strategy (Dale, Burch & Robinson, 2017). Another success strategy for continuing climate action innovation involved embedding and institutionalizing climate innovations in departmental mandates, policies, and programs. Partnerships and networks of climate actors that promoted policy coherence within systematic policy frameworks were also reported as critical elements (Dale et al., 2013). And, encouraging the transition to more sustainable community development paths that simultaneously restrains energy demand (despite population growth), drives the production of low carbon energy sources, and designs complete and compact neighbourhoods and communities that create alternative forms of transport, and encourage multi-use development is similarly essential (Burch, 2014; Shaw, 2013; Dale et al, 2018).

If policy interventions are to be effective, our data confirmed the importance of integrating outcomes from research on multi-level perspective (MLP) and multi-level governance (MLG) (Ostrom & Janssen, 2004; Betsill & Bulkeley, 2006; Bulkeley & Kern 2006; Armitage, Berkes & Doubleday, 2008) connecting the local, to regional, to national, and international regimes. MLP evidence illustrates the importance of various scales of interactivity for change (Geels 2005a; 2005b; 2010; 2011; Geels & Schot, 2007). While smaller or 'niche' levels effecting change in the larger regime level (Rocha et al., 2018), rapid and timely

deliberate government interventions for transformation will not be effective without policy coherence (within governments) and policy congruence (across government levels and sectors). There is a substantial literature on policy design (see Howlett, 2019 for an extensive survey), which not only delineates diverse policy and governing instruments, but also flags the need to identify relevant 'policy mixes' and the extent of their coherence and alignment (Howlett & Rayner, 2007), and relevant 'instrument constituencies' (government agencies and groups associated with prevailing policy regimes, Simons & Voß, 2018), which have circumscribed horizons, and resist change and working in new ways.

It is well-known that government systems, policy regimes, and bureaucracies resist change, but there is research that analyzes the circumstances under which non-incremental and even transformative change can occur. We will draw on the well-known 'punctuated equilibrium theory" (Baumgartner et al. 2018) and 'multiple streams" (Kingdon, 2011; Herweg et al., 2018) policy-making frameworks which not only explore the negative feedback loops which cause stability and reinforce policy regimes despite growing pressure for change, but also the conditions under which significant shifts in prevailing policy regimes can occur. Other literature explores the governance capacity at the political and bureaucratic levels for undertaking the design, approval, and launching of comprehensive policy interventions that involve multiple policy instruments, multiple actors, different levels of government, and non-government actors (Desveaux, Lindquist & Toner, 1994). We also build upon well-developed frameworks from the policy implementation literature (Mazmanian & Sabatier, 1988; Hill & Hupe, 2014; Lindquist & Wanna, 2015) on different implementation trajectories and pathways, especially for successful and durable policy regimes (Compton & 't Hart, 2019; Mintrom et al, 2019). Finally, we will draw on literature on public-sector performance monitoring systems, which has increasingly looked at monitoring progress and outcomes across levels of government (Bouckaert & Halligan, 2008).

Methodology

This project relies on various methods—case studies, interviews, focus groups, co-benefits analysis (Newell et al., 2018), knowledge mobilization tools, peer to peer learning exchanges, and virtual real-time conversations for each phase of the research (see Table below for details).

Initially, we will examine four scholarly frameworks to determine commonalities, desirability, and feasibility of applying them to the current Canadian government context. Three different time points have been chosen because of the possibility of rapidly changing climate scenarios and because our previous research has shown that there is little consensus in Canada about the nature and scale of change required (Clermont, 2017; Jost et al., 2019)—2030, 2040 and 2050.

A mixed-methods and contextual, comparative case study approach (Stake, 1995, 2006; Yin, 2003) will be employed, using empirical inquiry to investigate contemporary phenomena associated with climate governance within its real-life context using multiple sources of evidence (Yin, 2003). While a case study approach makes it difficult to generalize conclusions, it is highly appropriate when dealing with a process or complex real-life activities in great depth (Noor, 2008). In this study, we address the issue of generalization by explicitly acknowledging the goal of analytic generalization, which emerges from case study contexts rather than statistical generalization.

The case studies will be interrogated by applying four theoretical frameworks — polycentric governance, adaptive governance, multi-level perspectives, and multi-level governance. We will also use Voss and Bornemann's (2011) three overarching classifications — policy, polity, and politics as an analytical framework for the case studies. Our analysis will use the following evidence criteria: coalition-building; strategic partnerships; regime formation; a priori network formation; diversity and scale of actors; number of institutions and policy instruments coordinated to get action; and, nature of institutions — vertical, horizontal, boundary spanning; policy coherence, alignment within and between, along with quasi-institutional intermediaries, inter alia.

Eight case studies will be selected to explore what, if any, aspects of these governance approaches were in play and how and in what ways they can be used to inform new models of governance for Canada. Of primary and timely importance will be the COVID-19 pandemic for its unprecedented global response.

Two other case studies of broad national and international responses to crises will be explored — 911 and H1N1. Three case studies will examine non-governmental campaigns that exemplify essential elements of governance — the International Campaign to Ban Landmines (ICBL), 350.org, and Extinction Rebellion. The other two case studies will focus on governance structures and interactions around efforts to address major environmental issues (acid rain and depletion of the ozone layer campaigns) that involved effective partnerships and cohesion between government, NGO's, and the scientific community.

We will re-analyze our MC[3] rich data base to look for interviewee observations on government change to develop the interview protocol for a sample of retired government executives, deputy ministers from federal, provincial, and local governments, along with civil society leaders. The interview protocol will be developed with questions integrating the theoretical frames noted above, using a methodology similar to Moore et al. (2018). Government experts, key civil society leaders, campaign leaders and organizers, and quasi-institutional intermediaries will be interviewed. Interviewees will also include emerging younger civil society actors. Data from these participants will provide interesting insights in what ways the power of mass movements and networks might inform transformative governance change and influence traditional government hierarchies. Interview data will be coded thematically and analyzed (Gibbs, 2007; Seidel and Kelle, 1995), and the results will provide insight on governance successes, challenges, and barriers, thereby allowing us to interrogate research objective two. The analysis will illuminate elements of difference between effective governance approaches and structures surrounding social and environmental issues, and a comparative analysis of the case studies will allow for conceptualization of potential new governance arrangements, satisfying the third research objective.

Following case study analysis, the feasibility of the proposed new governance arrangements will be examined. A purposeful sample of senior civil servants (including retirees) from the three levels of government will be identified to validate the feasibility of these arrangements. This will then be triangulated with three focus groups — including the Canadian Association of Retired Parliamentarians, Deputy Ministerial breakfast meetings, and the Centre for Leadership and Management at the University of Ottawa which convenes senior public servants in training programs. As well, mentors, scholars, and fellows drawn from the Trudeau Foundation will be convened in separate focus groups. These focus groups will be take place virtually and will draw upon the Principal Investigator's expertise on bringing together diverse stakeholder groups and organizations from many sectors. A series of policy briefs will be developed from the outcomes of the focus groups and case study analysis, and these will be widely disseminated to participants and other government, practitioner, academic and NGO groups and networks throughout the four-year program of research.

Data will consist primarily of audio recordings and transcriptions of interviews, focus group discussions, and deliberations from the final peer-to-peer learning exchange. Because these data consist of the thoughts and ideas of human research participants, results will be anonymized and participant identifiers will not be included in dissemination materials, as per the ethical protocols of Royal Roads University. Data will be stored on university servers until a year following the completion of the project (i.e., it will be destroyed in 2024), and will be accessible to the research team through the university's password-protected SharePoint system, using a similar data management approach as done in MC[3] (www.mc-3.ca/collaboratory). Raw transcripts will only be available to the researchers and students; however, detailed case study material and possible governance models will be made available online on the project website to share ideas and receive feedback in as timely a manner as possible.

PHASE 1: Year 1. Evaluate the desirability and feasibility of existing academic governance frameworks	
1.1	**Document analysis**. Reviewing academic and grey literatures on recommended changes to the current government rules, incentives, programs, and initiatives, including the recent IISD Report on Policy Alignment (2019). <u>Outcome</u>: an interactive network map. **Synthesis.** Integration of theoretical sustainability frameworks building upon public administration and policy frameworks. <u>Outcome</u>: a working governance framework for implementing a carbon neutral economy.
1.2	**Traditional academic dissemination.** Developing a peer-reviewed publishing and conference presentation schedule with academic and student co-authors identified and timelines for publication. <u>Outcome</u>: Research dissemination.
PHASE 2: Years 1 and 2. Develop and analyze detailed case studies on responses to global crises	
2.1	**Case study documentation**. Review existing MC3 database to look for interviewee observations on needed government changes. <u>Outcome</u>: Interviewee protocol.
2.2	**Fieldwork:** Determine a sample of **interviewees** from both government and civil society actors. Analyzing evidence of new governance arrangements, including evidence of integrated planning, decision-making, strategic partnerships, coalition building, and the receptor capacity for change. <u>Outcome</u>: Interview data collection and analysis using thematic coding.
2.3	**Assess Canada's climate actions & sustainability strategies.** Identification of policy mixes. <u>Outcome</u>: Refined governance framework and two-page research synthesis for distribution to participants, government, practitioners, and civil society leaders.
PHASE 3: Years 3 and 4. Determine needed governance & institutional capacities	
3.1	**Focus groups:** Leading a series of virtual focus groups, bringing together government interviewees and civil society leaders in deliberatively designed virtual round tables to discuss the research outcomes with the research team. <u>Outcome</u>: To test desirability and feasibility of proposed framework.
3.2	**Participant learning exchange**: Conducting a peer-to-peer learning exchange, bringing together interviewees from both sectors to refine and revise the proposed governance framework. <u>Outcome</u>: Finalize the new proposed framework.
3.3	**Policy- and decision-maker learning exchange**: Conducting a concluding peer-to-peer learning exchange with interested policy- and decision-makers to determine the points of consensus and conflict; identify the potential co-benefits. Outcome: Action agenda for decision-makers.
3.4	**Co-benefits analysis.** Identifying the co-benefits of proposed framework that go beyond effective climate governance (e.g., trust, social capital, efficiency, etc.). <u>Outcome</u>: Interactive map relationships between changes in governance systems and potential co-benefits**.**
3.5	**Develop a framework for monitoring progress.**
3.6	**Action Agenda for Decision-Makers**: Develop an action agenda building upon research synthesis and research recommendations.
	Knowledge Mobilization. Disseminating findings will be an inherent element of the entire project from the publication of snapshot case study descriptions; brief policy syntheses; virtual real-time public conversations between the researchers and interviewees; use of website and social media channels; wide dissemination of the framework, the findings, the action agenda, and the co-benefits map to politicians, officials. and civil society leaders.

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Knowledge Mobilization Plan

Robinson and Cole (2014) reason that sustainability is an emergent property of dialogue which "involves creating processes of discussion and negotiation in order to address the inherently normative and ethical question of how we should live, and what choices we want to make, given the best available scientific knowledge, similarly the identification of new governance models demands a similar approach" (p. 137).

Knowledge mobilization tools and techniques will flow throughout the four years, beginning after the first six months. The Principal Investigator is recognized as a leader in Canada in convening unique transdisciplinary teams to discuss critical public policy issues to engage the wider Canadian publics. A series of real-time on-line conversations will be held (4 each year) that will discuss the four theoretical governance frameworks being explored, the preliminary outcomes of the case studies, and the group deliberations, to determine the social consensus, if any, around new governance models. The engagement of government decision-makers and civil society leaders will be critical to the process.

There will be six channels for knowledge mobilization: 1) a website with an online case study tool; 2) access to online case studies; 3) virtual real time online conversations (e-Dialogues); 4) webinars (Live Chats); 5) social media; and 6) a peer-to-peer learning exchange, in addition to traditional academic publishing and presentations. Deliberatively designed focus groups will include policy makers, municipal staff, quasi-institutional intermediaries such as the Institute for Governance (Ottawa), Schools of Public Administration and Public Policy, the Canadian Centre for Policy Alternatives, the University of Ottawa's Centre for Leadership and Training, the Canada School of the Public Service, the Policy Research Initiative of the Privy Council Office, as well as mentors and fellows from the Trudeau Foundation, other researchers, and civil society leaders. Nationally, virtual, real-time conversations (**e-Dialogues**) will feature the research team with lead actors from the case studies in conversation about the need for change and changing current development pathways. Each will be supported by **Live Chats**. Outreach will be extended nationally by combining existing networks of the diverse research team. The final **peer-to-peer learning exchange** will be led nationally and locally by having nodes led in major centres across the country connected through RRU's virtual learning centre, in order to stimulate social learning and contribute to enhanced evidence-based policy-making. RRU's new virtual learning innovation centre offers state of the art facilities for these fora, including the latest video conferencing technology. The PI has led several of these exchanges that have been very successful in bringing together large transdisciplinary expertise from across the country.

Social media will be used for communicating research outcomes to media and nationally through blogging, tweeting, Instagramming, a dynamic Facebook presence, complimented by timely podcast releases, with both members of the research team and civil society leaders. The PI has an internationally recognized web presence; her research website receives over 45,000 visits a year and was visited by over 95% of the world's countries in 2018. **Case study research** will be published in preliminary snapshots, using the PI's existing online case study tool, in order to speed the sharing of best practices as quickly as possible. This tool, tested in focus groups across the country, has been developed to satisfy the information needs of decision-makers, the business sector, practitioners and researchers.

Traditional dissemination will consist of peer-reviewed publications and conference presentations. There will be a special issue of the *Journal of Public Administration* under the leadership of co-applicant Lindquist. Other target journals include the *Canadian Journal of Political Science*, *Policy Options, Alternatives*, and so forth. In addition, journal articles will be shared via 2-minute videos for general publics. Policy briefs and a final action agenda will be widely disseminated across the country

Outcomes will be proactively communicated, building upon the team's extensive expertise in research curation with the integration of diverse social media channels. Collaborator Homer-Dixon will also use networks through the Cascade Institute (www.cascadeinstitute.org) to disseminate outputs and communicate outcomes.

Family name, Given name
Dale, Ann

Expected Outcomes
Elaborate on the potential benefits and/or outcomes of your proposed research and/or related activities.

Scholarly Benefits
Indicate and rank up to 3 scholarly benefits relevant to your proposal.

Rank	Benefit	If "Other", specify
1	Enhanced theory	
2	Enhanced research collaboration	
3	Knowledge creation/intellectual outcomes	

Social Benefits
Indicate and rank up to 3 social benefits relevant to your proposal.

Rank	Benefit	If "Other", specify
1	Enhanced policy	
2	Enhanced professional practice	
3	Environmental outcomes	

Audiences
Indicate and rank up to 5 potential target audiences relevant to your proposal.

Rank	Audience	If "Other", specify
1	Federal government	
2	Municipal government	
3	Practitioners/professional associations	
4	Academic sector/peers, including scholarly associations	
5	Provincial/territorial government	

Personal information will be stored in the Personal Information Bank for the appropriate program.

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Family name, Given name

Dale, Ann

Expected Outcomes Summary

Describe the potential benefits/outcomes (e.g., evolution, effects, potential learning, implications) that could emerge from the proposed research and/or other partnership activities.

The unique research partnership between RRU and UVic will result in an enriched doctoral education with the joint doctoral co-supervision, modelling leading-edge interdisciplinary methods and collaboration in addition to the access to diverse academic and policy expertise of the team. Students will be exposed to leading edge climate change policy, relevant RRU research and the public administration expertise at UVic, using frameworks, policies and recommendations on multi-level governance grounded in real life practice.

The post-doctoral researcher and doctoral students will be exposed to expertise in convening deliberatively designed multi-stakeholder focus groups, peer-to-peer learning exchanges and virtual on-line conversations, including the latest tools and techniques in research curation and social media communications. The team will be highly inclusive of the post-doc and students co-authoring peer reviewed journal articles and conference presentations.

Europe is leading the way in demonstrating the co-benefits of moving to low carbon economies, in terms of new job opportunities and the economic and social benefits of adopting leading edge climate innovations. Refusing to adopt climate innovation and accelerating its take-up by government leadership will result in countries becoming both economically, ecologically and socially impoverished. Unless climate pollution is rapidly addressed, the costs of dealing with increased wildfires and flooding will only increase, reducing the productive capacity of the economy and the ability to meet health and education costs. Mitigating climate pollution will also lead to co-benefits for biodiversity conservation and encroaching land-use on wildlife habitat, one of the contributing factors to the recent global pandemic. It is clear the intersectionality between climate pollution, biodiversity conservation and human health needs to be immediately addressed (Hobbs, 2020; Newell et al., 2018; Newell & Dale, 2020) or the productive capacity of society will be subsumed to meet crisis after crisis.

Expected outcomes will benefit all Canadians---ecologically, socially and economically. By decreasing GHG emissions, benefits accrue to both the environment and human health, resulting in decreased hospital admissions due to respiratory problems, for example. We will build on our co-benefits research and mapping, by demonstrating the co-benefits of adopting a multi-governance framework for implementing a carbon neutral economy. Embracing, rather than resisting, the latest climate research for transforming current development paths leads to the competitive advantages in a global marketplace through adopting a carbon neural economy. Highly qualified personnel from the project will become future decision-makers and leaders in critical public policy issues---a cadre of people trained in both the science and the practice of being able to communicate science that is widely accessible to diverse audiences. Transitioning financial resources from outdated exploitist resource extraction to leading-edge climate innovations and sustainable resource management will ensure that there are resources for future needs and requirements of Canadian society. Without transition strategies, policies, incentives and a framework for moving forward, Canada will remain mired in old polarized debates such as pipelines versus no pipelines, to name only one conflictual issue. Persisting in old development pathways and continuing ecologically damaging and economically perverse incentives crowds out potential and future innovation space for competing in a global marketplace.

Personal information will be stored in the Personal Information Bank for the appropriate program.

Application WEB

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Canada

Research Team, Previous Output and Student Training

Climate change adaptation and mitigation and biodiversity loss are modern societal challenges that demand unprecedented collaboration in their resolution. They are beyond any one sector, any one level of government, or discipline to solve (Dale, 2001) and interdisciplinary and trans-disciplinary research are fundamental. This is a unique nexus of climate science, public administration and political science expertise, a partnership between RRU scholars and the University of Victoria's school of public administration. Both universities are undergoing significant expansion in their mandates. The latter has a new Director and has recently hired five new faculty members and is now integrating climate change into the curriculum. RRU is currently revising its masters program in environmental management to concentrate on climate pollution and biodiversity loss as well as local solutions to these two modern challenges and introducing a new graduate certificate program in the science and policy of climate change. UVic is establishing a new chair in transformative governance for planetary health. The new Cascade Institute led by Dr. Thomas Homer-Dixon devoted to climate solutions and innovations has also been established.

A. Description of the Research Team

The Principal Investigator, Dr. Ann Dale is a Professor in the School of Environment and Sustainability at RRU and brings extensive knowledge of government as a former executive of the federal government for 23.5 years, with expertise in strategic policy development and new government administration. Examples include the creation of the National Round Table on the Environment and the Economy and advising on provincial round tables; the creation of the first federal department to be created outside of Ottawa, the Atlantic Canada Opportunities Agency; several federal/private sector task forces looking at regulatory reform; and natural resource management and machinery of government reform. She held her university's first CRC in sustainable community development (2004-2014), is a Trudeau Alumna, and a Fellow of the World Academy of Art and Sciences. She is a recipient of the CUFA Paz Buttedahl Distinguished Career Academic Award (2014); the Canada Council for the Arts, Molson Prize for the Social Sciences (2013) and the Bissett Award for Distinctive Contributions to the Public Sector (2009). Her book, *At the Edge: Sustainable Development in the 21st Century*, received the 2001 Policy Research Initiative Award for Outstanding Research Contribution to Public Policy. In addition to her CRC research program, she leads a major climate change adaptation and mitigation research project in British Columbia, and a co-investigator on four other SSHRC funded grants. Professor Dale is a leader in the country on virtual on-line real-time virtual conversations. www.crcresearch.org; www.changingtheconversation.ca; www.mc-3.ca Dale will devote 75% of her research time to the project.

Co-Applicants: **Dr. Ken Christie** is a Professor in the Human Security and Conflict graduate programs at RRU. Christie is a political scientist, author, editor and international academic who has taught and conducted research at universities in the US, Singapore, South Africa, Norway and Dubai. Working all over the world has given him a unique perspective on peace, development and human security, and governance systems. His work has focused on issues of human rights, security and democratization. He is widely published as an author and editor with eight books to his credit. Currently he is working on issues of religion, ethnic and state formation/failure in the Middle East, North Africa and South Asia. He is a senior associate member of St. Antony's College, Oxford University and has been a visiting professor at Oxford University, the University of Stellenbosch in South Africa, the Institute of Southeast Asian Studies in Singapore and universities in Sweden and Denmark. He has also conducted evaluations of human rights NGOs for the Norwegian government in Southeast Asia. Christie will devote 50% of his research time to this project.

Dr. Leslie King is a Professor of Environment and Sustainability at RRU. She brings extensive interdisciplinary experience to the team as well as governance research into northern and coastal

communities. Her most recent research projects include: Conflicting Knowledge Systems in the Pacific Northwest; Meeting the Climate Change Challenge (MC^3), Protected Areas and Poverty Reduction: A Canada Africa Research and Learning Alliance, (PAPR); Arctic Climate Predictions: Pathways to Sustainable Resilient Societies (ARCPATH); and Northern Knowledge for Resilience, Sustainable Environments and Adaptation in Coastal Communities in the Circumpolar Arctic (NORSEACC). She has led synthesis processes for other large complex inter-disciplinary, international research projects such as the 10-year IHDP project; and Institutional Dimensions of Global Environmental Change (IDGEC). King will devote 30% of her research time, specifically dedicated to synthesis and integration of research findings and outcomes.

Dr. Tamara Krawchenko is Assistant Professor at the School of Public Administration at UVic. She studies public policy from an interdisciplinary and multi-level governance perspective at multiple scales—from international frameworks to local politics. Her research interests include: political economy and economic geography; comparative public policy; land use planning and strategic spatial planning; community and economic development; territorial policies (regional, rural, urban); and transportation and infrastructure policy. Her multi-disciplinary research has covered topics ranging from rural development, to the governance of land use, infrastructure policy, intergenerational equity and public finance. She has authored over 50 articles, books and reports. For this grant Krawchenko will devote 30% of her research time and contribute expertise on multi-level governance and coordinate (with Lindquist) the PhD-student supervision at UVic in support of the case study research and take the lead on key workshop events.

Dr. Evert Lindquist is Professor of Public Administration at UVic and Editor, *Canadian Public Administration*. Lindquist has served on IPAC's Board of Directors and President of the Canadian Association of Programs in Public Administration. He has published extensively (books, chapters, and articles) on public sector reform, governance and decision-making, central agencies, policy capability, think tanks, consultation, horizontal management, government-nonprofit relations, budgeting, leadership and competing values, and visualization. He co-edited a special issue in *Canadian Public Administration* on 'Understanding Governance in the Digital Era' (Dec. 2017). Lindquist will devote 30% of his research time, contributing expertise in public administration and horizontal coordination, liaising for UVic with RRU on this project, and co-leading (with Krawchenko) the PhD-student supervision at UVic to support the case study research.

Collaborators: Morris Rosenberg has had a long and distinguished career in the federal public service. He worked in the Department of Justice from 1979 to 1989 and then was appointed Assistant Deputy Minister in the Department of Consumer and Corporate Affairs. From 1993 to 1996, he was Assistant Secretary to the Cabinet, Economic and Regional Development Policy, at the Privy Council Office. He was appointed Deputy Secretary to the Cabinet (Operations) in 1996. Two years later, he was appointed Deputy Minister of Justice and Deputy Attorney General of Canada, a post he held for six years. He was appointed Deputy Minister of Health Canada from 2004 to 2010 when he became Deputy Minister of Foreign Affairs. He served as President and CEO of the Pierre Elliott Trudeau Foundation from 2014 to 2018. Rosenberg was appointed a member of the Order of Canada in 2015 for his "sustained commitment to our country and for his effective and ethical leadership as a senior public servant." He holds a BA from McGill University, an LLL from the Université de Montréal and an LLM from Harvard University. Rosenberg will devote 30% of his time, focusing on convening and leading focus groups, workshops and contributing to peer-to-peer learning exchange(s).

Dr. Thomas Homer-Dixon, is the Founder and Director, Cascade Institute. An internationally recognized scholar, his research focuses on threats to global security in the 21st century, including economic instability, climate change, and energy scarcity. He also studies how people, organizations, and societies can better resolve their conflicts and innovate in response to complex problems. He will devote 10% of his time, in conceptual and synthesis team meetings, and the peer-to-peer exchanges.

Dr. Astrid Brousselle is Professor and Director of UVic's School of Public Administration. Brousselle's main expertise is in evaluation theories and methods in healthcare and healthcare system analysis. In her career, she has published over 60 scientific articles and she co-wrote and co-edited a book (in 2009), *L'Évaluation: Concepts et Méthodes*. Recently she published two comments in *The Lancet Planetary Health* about the ecosocial transition. Before taking a leadership role at UVic, she held a Canada Research Chair in Evaluation approaches and health system analysis. She is currently leading with Tara Ney and Lisa Helps, Mayor of Victoria, a research project The *Vancouver Island Climate Action Leadership Plan: A developmental evaluation*). This project mobilizes all municipalities on Vancouver Island with regard to accelerating climate action. Brousselle has also submitted a grant proposal to CIHR titled *Vers une transition socioécologique : quels leviers mobiliser?* (Sept 2019) which will offer complementary knowledge to Dale's project. She will devote 20% of her research time to this project.

Dr. Emmanuel Brunet-Jailly is a Professor at the School of Public Administration at UVic, holds a Jean Monnet Chair in Innovative Governance (2017-20), and is an expert in multi-level governance. He secured his PhD in Political Science from the University of Western Ontario. Previously he worked for the French public sector for ten years, including postings with the French Small Business Administration and the Nord Pas-de-Calais Regional Council. In both capacities, he worked with the European Commission and the European Union Directorate for Regional Policies in Brussels. Prior to his appointment at UVic, Brunet-Jailly was Assistant Professor, Deptartment of Political Science, University of Western Ontario from 1999-2000, and Assistant Director, Nanovic Institute for European Studies at the University of Notre Dame, 2000-2001. He was the Jean Monnet Chair in European Urban and Border Region Policy (2014-16), Editor of the *Journal of Borderland Studies*, Director of the Borders In Globalization research program (2013-20) funded by a $2.4 million SSHRC Partnership Grant, and Director of the European Union Jean Monnet Center and Jean Monnet Network research programs (2013-19). For this grant, he will devote 20% of his research time to supervising PhD students and analyzing alternative governance models for coordinating climate change interventions.

Dr. Tara Ney is Associate Professor of Public Administration at UVic, with a PhD in Psychology from Southampton University, and a MA in Dispute Resolution (UVic). Ney is an expert in designing inclusive and effective decision-making processes in organizations and communities. Prior to joining UVic, she worked in the government, non-profit, and private sectors as a clinical and forensic psychologist, with extensive experience in community development, locally in restorative justice programming and internationally in post-conflict zones. She has authored over 40 journal articles and reports, and two edited volumes. Since 2008 she has served as a municipal councillor in Oak Bay. Ney is involved in two major research projects: the *Vancouver Island Climate Action Leadership Plan: A developmental evaluation*, involving elected local government politicians and First Nations leaders on Vancouver Island responding to the state of emergency on climate change to build capacity in local governments to identify, coordinate, and accelerate climate change actions; and *Co-constructing Justice: Citizen-centered design for public services complaint systems*, funded by SSHRC, to make justice more accessible to users of public sector services. For this grant she will supervise a PhD student's research on a case study and devote 20% of her research time.

Dr. Katya Rhodes is Assistant Professor in the School of Public Administration at UVic. Prior to joining the School, Dr. Rhodes was Senior Economic Advisor in the British Columbia government's Climate Action Secretariat, leading economic analyses for the CleanBC plan, and taught Environmental Economics at RRU. Rhodes holds a PhD degree in Resource and Environmental Management from Simon Fraser University where she was a Vanier Scholar conducting research on economic efficiency, environmental effectiveness, and political acceptance of BC's climate policies. Her research skills include descriptive and inferential statistical analyses, energy-economy modeling, collection and parameterization of survey data, media and content analysis. Rhodes' professional experiences include

developing clean technology and green jobs databases at the Vancouver Economic Commission, analyzing the provincial policy for the Cumulative Effects Framework in the Ministry of Forests, Lands, and Natural Resource Operations, and investigating public and stakeholder perceptions of BC's carbon tax at the Pembina Institute. Her research interests span climate policy analysis, sustainability transitions, social and political acceptance of policy, economic analysis of policy impacts, and energy-economy modeling. For this grant, Rhodes will supervise PhD students working on the case studies, and devote 20% of her research time.

B. Description of previous and ongoing research results

Together, the applicant, co-applicants, and collaborators have a history of working effectively in results-oriented collaborations informing evidence-based policy decisions. The results from Dale's climate change research has contributed significantly to the epistemology through detailed descriptions of leading-edge climate innovations, to articulating the co-benefits of climate actions, to developing an assessment framework for local governments to evaluate the impact of their policies on development path change. Many of the collaborators have, in addition to climate expertise, diverse government practitioner expertise as well as research in governance, governments, evidence-based research outcomes, social justice and equity, and evaluation. In addition to being a unique university collaboration, it is a highly interdisciplinary scholar-practitioner team.

C. Description of proposed student training strategies

Training and development will take into account the need to educate young Canadian researchers in climate change adaptation, mitigation and governance, as well as contemporary ways to communicate their research outcomes to wider publics and policy makers in timely and proactive ways. Each member of the research team already has a number of masters and doctoral students that they are supervising in this area, and in addition, many have graduate students working in research centres, governments and the private sector. The doctoral students will be responsible for case study research and will be exposed to working first-hand in a large interdisciplinary team. The students will be trained in community-based research methods and fieldwork techniques, working closely in the field with their co-supervisors and will be involved in working on the new case study development with each of the co-applicants and the principal collaborator, Morris Rosenbury. Students will be trained in data collection and analysis, evidence-based policy development, disseminating research outcomes through leading-edge ICTs, and recently developed research curation techniques for translation to diverse audiences.

Given the heavy emphasis on knowledge mobilization, the project will also engage one post-doctoral scholar with expertise in political science and climate change. They will co-ordinate the case study data collection, analysis, and co-lead the knowledge mobilization component. This will involve the design and convening of virtual real-time on-line conversations, practitioner webinars, focus groups and workshops, and the concluding peer-to-peer learning exchange.

The students and post-doctoral scholar will be exposed to both inter- and trans-disciplinary research methods since the proposed work will engage a wide diversity of civil society and government research partners, as well as civil society leaders. In addition to traditional peer reviewed journal article publication, they will be involved in co-authoring at least two journal articles with their co-supervisors, will participate in virtual conversations and other peer-to-peer learning exchanges at the conclusion of their fieldwork, and will participate in the annual workshops and the full research team meetings. Each year a panel presentation will be made to the Congress of Humanities and Social Sciences, and this panel will include at least one student and two members of the research team. The goal is to graduate scholars who are both excellent researchers contributing to the production of useful knowledge and communicators to diverse decision makers, local government and community leaders.

Family name, Given name
Dale, Ann

Funds Requested from SSHRC

For each budget year, estimate as accurately as possible the research costs that you are asking SSHRC to fund through a grant. For each Personnel costs category, enter the number of individuals to be hired and specify the total amount required. For each of the other categories, enter the total amount required.

Personnel costs	Year 1 No.	Year 1 Amount	Year 2 No.	Year 2 Amount	Year 3 No.	Year 3 Amount	Year 4 No.	Year 4 Amount	Year 5 No.	Year 5 Amount
Student salaries and benefits/Stipends										
Undergraduate										
Masters										
Doctorate	2	30,912	2	33,488	2	33,488	2	23,184	0	0
Non-student salaries and benefits/Stipends										
Postdoctoral	1	34,375	1	48,125	1	48,125	1	34,375	0	0
Other										

Travel and subsistence costs	Year 1	Year 2	Year 3	Year 4	Year 5
Applicant/Team member(s)					
Canadian travel	0	0	2,120	2,120	0
Foreign travel					
Students					
Canadian travel	0	0	2,120	2,120	0
Foreign travel					
Other expenses					
Professional/Technical services	0	10,000	0	0	0
Supplies					
Non-disposable equipment					
Computer hardware					
Other					
Other expenses (specify)					
Open access fees	0	0	0	6,000	0
Total	65,287	91,613	85,853	67,799	0

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Budget Justification - Total SSHRC Request $310,552

Personnel Costs: $286,072
The sum of $286,072 is requested to fund the following personnel.
- 2 doctoral student(s) at a rate of $28/hr + 4% vacation pay + 11% employer CPP and EI costs working 10 hrs per week. The(se) student will work 48 weeks in year 1; 52 in year 2; 52 in year 3; and 36 in year 4. Project total over four years: $121,072
- 1 post-doctoral researcher at a rate of $55,000 full time equivalent 25% for benefits and employer CPP and EI costs. The post doc will work 0.5 FTE in years 1 and 4 and 0.7 FTE in years 2 and 3. Project total over three years: $165,000

Doctoral students will be responsible, working with their co-supervisors, on detailed case study development, as well as participating in peer-to-peer learning exchanges, knowledge mobilization using the various social media channels. Each will also be a co-author on at least one peer reviewed journal article. Students will convene the online focus groups and the final peer-to-peer learning exchanges working closely with the PI and co-applicant Lindquist. The post-doctoral researcher will co-ordinate case study data collection, analysis and co-lead the KM. They will participate in the focus groups, co-develop a publishing schedule, lead the development of the interview protocols, and co-author at least six peer reviewed journal articles and participate in the Congress of Humanities and Social Sciences.

Professional/Technical Services: $10,00
A transcription service will be used to provide transcription at an estimate cost of $10,000 over the life of the project.

Travel Expenses: $8,480
Applicant Total: $0
    a) Applicant/Team - Research Travel: Total $0
All focus groups will be held online therefore no travel expenses are anticipated for data collection.

    b) Applicant/Team - Travel to Conferences: Total $4,240
Members of the team, including the post-doc will participate in presentations at academic conferences, such as the Institute of Public Administration of Canada, Congress, Canadian Association of Programs in Public Administration (CAPPA), and participate in briefings to key government officials. Members of the team will use their own institutional funds for conference travel, however, funds are requested for the post-doctoral researcher to present at two domestic conferences over the life of the project at $2,120 each (flight average cost $1000; Accom 3 x 150=$450; Meals 4 x 55=$220; Ground Transp $150; Conf Fees $300); and two international conferences over the life of the project at $3,230 each (flight average cost $1500; Accom 5 x 150=$750; Meals 6 x 55=$330; Ground Transp $150; Conf Fees $500) = $4,240.

Student Total: $4,240
    a) Student – Research Travel: Total $0
Students will participate in the focus groups in the cities in which they reside, and via online platforms therefore no travel costs are expected to be incurred.
    b) Student - Travel to Conferences: Total $4,240
Funds are requested to enable each doctoral student to present at one domestic conference over the life of the project (e.g., Congress of Humanities and Social Sciences, and other association workshops as identified). Costs are estimated at $2,120 each (flight average cost $1000; Accom 3 x 150=$450; Meals 4 x 55=$220; Ground Transp $150; Conf Fees $300) = $4,240

Focus groups and peer-to-peer learning exchanges will be held using two platforms that have been developed by the PI, the virtual real-time e-Dialogue platform, www.changingtheconversation.ca, and CoLabS, a private on-line collaboratory designed to bring together researchers, decision-makers, practitioners and civil society leaders, https://www.changingtheconversation.ca/colabs/. Wulf (1989, p. 19) defines a collaboratory as a "center without walls, in which…researchers can perform their research without regard to physical location, interacting with colleagues, accessing instrumentation, sharing data and computational resources, [and] accessing information in digital libraries. CoLabS is a flexible, open-source, Drupal-based platform that has the capacity for the co-production of useful knowledge, facilitating research team brainstorming, collaboration on research outcomes, and as a repository for all project documentation (although interview data will be stored on a private sharepoint platform at RRU). The learning exchanges will be held on the e-Dialogue platform, which in the past have been public for the purposes of knowledge mobilization.

In the event that we continue to be restricted from travelling due to the pandemic, the above conference funds will be used to support more online conference attendance for more members of the team.

Other Expenses: $6,000
$6,000 in year 4 for open access publishing fees – $1,500 per publication x 4 publications

Total funds requested from SSHRC: $310,552

Item	Year 1	Year 2	Year 3	Year 4	Totals
Personnel – Doctoral student(s)	$30,912	$33,488	$33,488	$23,184	$121,072
Personnel – Post-doctoral	$34,375	$48,125	$48,125	$34,375	$165,000
Professional/Technical Support Transcription services		$10,000			$10,000
Conference travel – PI, collaborator, post-doctoral			$2,120	$2,120	$4,240
Conference travel – student(s)			$2,120	$2,120	$4,240
Other – Open access publishing fees				$6,000	$6,000
Total Project Cost	**$65,287**	**$91,613**	**$85,853**	**$67,799**	**$310,552**

Royal Roads University Contribution $29,140 ($16,000 cash / $13,140 in-kind)
As a core faculty member Dale is able to apply for peer reviewed internal grants and would likely secure $4,000 per year ($16,000) in total.

Royal Roads University will provide in-kind IT support for this project. Website support will include 64 hours for security patches, fixes, and change requests at $60 per hour ($5,400 over three years); AWS hosting at $150 per month ($1,200/yr); domain & SSL ($600/yr). In addition, technical support for video-conferencing in the workshops will be provided, and this will consist of approximately 12 hours of work at $60 per hour ($720).

Total value of the project is $339,692.

Funds from Other Sources

You must include all other sources of funding for the proposed research. Indicate whether these funds have been confirmed or not.

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Full organization name Contribution type	Confirmed	Year 1 Year 5	Year 2	Year 3	Year 4
Royal Roads University	☒	3,780	3,780	3,780	1,800
In Kind		0			
Royal Roads University	☐	4,000	4,000	4,000	4,000
Cash		0			
	☐				
	☐				
	☐				
	☐				
	☐				
	☐				
	☐				
Total funds from other sources		7,780	7,780	7,780	5,800
		0			

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Suggested Reviewers

List Canadian or foreign specialists whom SSHRC may ask to assess your proposal.
List keywords that best describe the assessor's areas of research expertise. Please refer to the Suggested Assessors section of the detailed instructions for more information on conflicts of interest.

Family name	Given name	Initials	Title
HANNA	Kevin		Dr.

Org. code	Full organization name	Keywords
	UBC Okanagan	environmental impact assessment; integrated resource and environmental management; climate change adaptation policy; natural resources policy

Department/Division name	Address
Director, UBC Centre for Environmental Assessment Research	Irving K Barber School of Arts and Science 3187 University Way

	Country code	Area code	Number	Extension	City/Municipality	Prov./State	Postal/Zip code
Telephone number	1	250	807-9265		Kelowna	BC	V1V1V7
Fax number					Country CANADA		

E-mail kevin.hanna@ubc.ca

Family name	Given name	Initials	Title
ROBINSON	Pamela		Dr.

Org. code	Full organization name	Keywords
	Ryerson University	urban sustainability; environmental design; environmental planning; urban governance; public engagement; progressive pedagogy

Department/Division name	Address
Faculty of Community Services	SBB-448 South Bond Bldng School of Urban and Regional Planning 390 Victoria St

	Country code	Area code	Number	Extension	City/Municipality	Prov./State	Postal/Zip code
Telephone number	1	416	979-5000		Toronto	ON	M5B2K3
Fax number					Country CANADA		

E-mail pamela.robinson@ryerson.ca

Family name	Given name	Initials	Title
BALLAMINGIE	Patricia		Dr.

Org. code	Full organization name	Keywords
	Carleton University	just and sustainable food systems; food policy and governance; sustainable community; environmental conflict & deliberative democray

Department/Division name	Address
Geography and Environmental Studies	B440 Loeb Building 1125 Colonel By Drive

	Country code	Area code	Number	Extension	City/Municipality	Prov./State	Postal/Zip code
Telephone number	1	613	520-2600		Ottawa	ON	K1S5B6
Fax number					Country CANADA		

E-mail patricia.ballamingie@carleton.ca

Application WEB

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Internal use	CID (if known)
612280	65116

Identification

Only the information in the Name section will be made available to selection committee members and external assessors. Citizenship and Statistical and Administrative Information will be used by SSHRC for administrative and statistical purposes only. Filling out the statistical and Administrative Information section is optional.

Name

Family name	Given name	Initials
Dale	Ann	

Citizenship - Applicants and co-applicants must indicate their citizenship status by checking and answering the applicable questions.

Citizenship status: ◉ Canadian ◯ Permanent resident since (yyyy/mm/dd) _____ ◯ Other (country) _____

Have you applied for permanent residency? ◯ Yes ◯ No

Statistical and Administrative Information

Permanent postal code in Canada (i.e. K2P1G4)	Correspondence language	Previous contact with SSHRC? (i.e. applicant, assessor, etc.)
K1M1P1	◉ English ◯ French	◉ Yes ◯ No

Full name used during previous contact, if different from above

Ann Dale

Contact Information

The following information will help us to contact you more rapidly. Secondary information will not be released by SSHRC without your express consent.

Primary telephone number				Secondary telephone number			
Country code	Area code	Number	Extension	Country code	Area code	Number	Extension
	819	671-1489	4117				

Primary fax number				Secondary fax number			
Country code	Area code	Number	Extension	Country code	Area code	Number	Extension
	250	391-2610					

Primary E-mail	ann.dale@royalroads.ca
Secondary E-mail	

Checked

Web CV

2020/09/29

Identification

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Family name, Given name

Dale, Ann

Current Address

Use only if you are not affiliated with a department at a Canadian university. (If you are affiliated with a department at a Canadian university, the department's mailing address will be used.) If you wish to use another address, specify it under the Correspondence Address.

Correspondence Address

Complete this section if you wish your correspondence to be sent to an address other than your current address.

Address

_____

_____

_____

Address

_____

_____

_____

City/Municipality	Prov. / State	Postal/Zip code	City/Municipality	Prov. / State	Postal/Zip code

Country	Country

Temporary Address

If providing a temporary address, phone number and/or E-mail, ensure that you enter the effective dates.

Permanent Address in CANADA

Address

_____

_____

_____

Address
202-174 Stanley Avenue

_____

_____

City/Municipality	Prov./ State		City/Municipality	Prov./ State	Postal/Zip code
			Ottawa	ON	K1M1P1

Country	Country CANADA

Start date (yyyy/mm/dd)	End date (yyyy/mm/dd)	Temporary telephone/fax number
		Country code Area code Number Extension

Temporary E-mail

Web CV

Research Expertise (optional)

The information provided in this section refers to your own research expertise, not to a research proposal. Filling out the following 4 sections is optional. This page will not be seen by selection committee members and external assessors. This section will be used for planning and evaluating programs, producing statistics, and selecting external assessors and committee members.

Areas of Research

Indicate and rank up to 3 areas of research that best correspond to your research interests as well as areas where your research interests would apply. Duplicate entries are not permitted.

Rank	Code	Area
1	180	Environment and Sustainability
2	170	Energy and natural resources
3	131	Economic and Regional Development

Temporal Periods

If applicable, indicate up to 2 historical periods covered by your research interests.

From			To		
Year	BC	AD	**Year**	BC	AD
_____	○	○	_____	○	○
_____	○	○	_____	○	○

Geographical Regions

If applicable, indicate and rank up to 3 geographical regions covered by your research interests. Duplicate entries are not permitted.

Rank	Code	Region
1	1130	Western Canada
2	1000	North America
3	9001	International

Countries

If applicable, indicate and rank up to 5 countries covered by your research interests. Duplicate entries are not permitted.

Rank	Code	Countries	Prov./State
1	1100	CANADA	
2	7100	AUSTRALIA	
3	1200	UNITED STATES	
4	3225	UNITED KINGDOM	
5			

Web CV

Curriculum Vitae

Family name, Given name
Dale, Ann

Language Proficiency

	Read	Write	Speak	Comprehend aurally	Other languages
English	X	X	X	☐	
French	X	☐	X	☐	

Work Experience

List the positions, academic and non-academic, you have held beginning with the current position and all previous positions in reverse chronological order, based on the start year.

Current position	Start date (yyyy/mm)
Full Professor	2000/1

Org. code	Full organization name
1591211	Royal Roads University

Department/Division name

School of Environment and Sustainability

Position type	⦿ Tenured ○ Non-tenure	Employment status	⦿ Full-time ○ Part-time
	○ Tenure-track ○ Non-academic		○ Non-salaried ○ Leave of absence

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Director	2019/9	

Org. code	Full organization name
1591211	Royal Roads University

Department/Division name

School of Environment and Sustainability

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Founding Research Associate in Residence	2011/1	2012/12

Org. code	Full organization name
1	Council of Canadian Academies

Department/division name

Office of the President & CEO

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Research Associate	1993/1	2000/12

Org. code	Full organization name
1590111	The University of British Columbia

Department/Division name

Sustainable Development Research Institute

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Family name, Given name
Dale, Ann

Work Experience (cont'd)

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Director	1988/1	1993/12

Org. code	Full organization name
1	Federal Government-Privy Council Office

Department/Division name
National Round Table on the Environment and the Economy

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Departmental Secretary	1987/1	1988/12

Org. code	Full organization name
1	Federal Government - Atlantic Canada Opportunities Agency

Department/Division name
Policy, Planning and Systems

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Assistant Director	1986/1	1987/12

Org. code	Full organization name
1	Federal Government - Privy Council Office

Department/Division name
Senior Personnel Secretariat Policy Planning and Systems

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Member	1985	1986

Org. code	Full organization name
1	Federal Government-Ministerial Task Force On Program Review

Department/Division name
Natural Resources Regulatory Programs

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Strategic Policy Advisor	1980/1	1985/12

Org. code	Full organization name
1	Federal Government, Treasury Board Secretariat

Department/Division name
Office of Regulatory Reform

Web CV

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Canadä

Family name, Given name
Dale, Ann

Work Experience (cont'd)

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Research Associate	1979/1	1979/12

Org. code	Full organization name
1	Federal Government, D'Avignon Commission

Department/Division name
Privy Council Office

Position	Start date (yyyy/mm)	End date (yyyy/mm)
Program Officer	1976/1	1979/12

Org. code	Full organization name
1	Federal Government, Anti-Inflation Board

Department/Division name
Federal Government

Position	Start date (yyyy/mm)	End date (yyyy/mm)

Org. code	Full organization name

Department/Division name

Position	Start date (yyyy/mm)	End date (yyyy/mm)

Org. code	Full organization name

Department/Division name

Position	Start date (yyyy/mm)	End date (yyyy/mm)

Org. code	Full organization name

Department/Division name

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Academic Background

List up to 5 degrees, beginning with the highest degree first and all others in reverse chronological order, based on the start date.

Degree type	Degree name	Start date (yyyy/mm)	Expected date (yyyy/mm)	Awarded date (yyyy/mm)
Doctorate		1995/09		1999/01

Disc. code	Discipline	Did SSHRC support enable you to get this degree?
99999	Natural Resource Sciences	◯ Yes ⦿ No

Org. code	Organization
1240211	McGill University

Country CANADA

Degree type	Degree name	Start date (yyyy/mm)	Expected date (yyyy/mm)	Awarded date (yyyy/mm)
Master's		1985/09		1994/09

Disc. code	Discipline	Did SSHRC support enable you to get this degree?
99999	Public Administration	◯ Yes ⦿ No

Org. code	Organization
1350211	Carleton University

Country CANADA

Degree type	Degree name	Start date (yyyy/mm)	Expected date (yyyy/mm)	Awarded date (yyyy/mm)
BA Gen.		1972/09		1975/09

Disc. code	Discipline	Did SSHRC support enable you to get this degree?
63000	Psychology	◯ Yes ⦿ No

Org. code	Organization
1350211	Carleton University

Country CANADA

Degree type	Degree name	Start date (yyyy/mm)	Expected date (yyyy/mm)	Awarded date (yyyy/mm)

Disc. code	Discipline	Did SSHRC support enable you to get this degree?
		◯ Yes ◯ No

Org. code	Organization

Country

Degree type	Degree name	Start date (yyyy/mm)	Expected date (yyyy/mm)	Awarded date (yyyy/mm)

Disc. code	Discipline	Did SSHRC support enable you to get this degree?
		◯ Yes ◯ No

Org. code	Organization

Country

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Canadä

Family name, Given name
Dale, Ann

Credentials

List up to 6 licences, professional designations, awards and distinctions you have received and feel would be the most pertinent to the adjudication of your application. List them in reverse chronological order, based on the year awarded.

Category	Name	Source or Country	Duration (Months)	Value / Year awarded
Academic Prize	Paz Buttedahl Distinguished Career Academic Award	Canadian Assoc of University Faculty Associations CANADA	0	$0 2014
Academic Prize	Molson Prize for the Social Sciences	Canada Council for the Arts CANADA		$50,000 2013
Academic Prize	CarletonU.Sch Pub Pol & Admin Bissett Alumni Award	University CANADA		$0 2009
Fellowship	Trudeau Foundation Fellow	Trudeau Foundation CANADA	36	$225,000 2004
Fellowship	World Academy of Art and Science Fellow	UNITED STATES		2003
Academic Prize	Award, Outstanding Contribution to Public Policy	CANADA		2001

Research Expertise

The information provided in this section refers to your own research expertise, not to a research proposal.

Keywords

List keywords that best describe your areas of research expertise. Separate keywords with a semicolon.

sustainable community development; governance; deliberative dialogue; climate change adaptation and mitigation; biodiversity conservation; social change strategies; multi-stakeholder processes; social media

Disciplines

Indicate and rank up to 5 disciplines that best correspond to your research interests. Duplicate entries are not permitted.

Rank	Code	Discipline	If Other, specify
1	70000	Interdisciplinary Studies	
2	99999	Other	Environment and Sustainability
3	62820	Public Policy Studies	
4	63000	Psychology	
5			

Personal information will be stored in the Personal Information Bank for the appropriate program.

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PROTECTED B WHEN COMPLETED

Canada

Family name, Given name

Dale, Ann

Funded Research

List up to 8 grants or contracts you have received from SSHRC or other sources. List them in reverse chronological order, based on the year awarded. If you are not the applicant (principal investigator), specify that persons' name.

Org. code	Full name of funding organization	Year awarded (yyyy)	Total amount (CAN$)
3010325	Social Sciences and Humanities Research Council of Canada	2017	$65,000

Role		Completion status [X] Complete
Applicant		

Project title: Research Curation: Making a Difference

Applicant's family name	Applicant's given name	Initials

Org. code	Full name of funding organization	Year awarded (yyyy)	Total amount (CAN$)
1	Canada Foundation for Innovation	2016	$168,000

Role		Completion status [X] Complete
Applicant		

Project title: CoLabS: Sustainable community development

Applicant's family name	Applicant's given name	Initials

Org. code	Full name of funding organization	Year awarded (yyyy)	Total amount (CAN$)
3010325	Social Sciences and Humanities Research Council of Canada	2015	$198,259

Role		Completion status [X] Complete
Co-applicant		

Project title: Safe Passage: Towards an Integrated Planning Approach for Landscape Connectivity

Applicant's family name	Applicant's given name	Initials
Lister	Nina-Marie	

Org. code	Full name of funding organization	Year awarded (yyyy)	Total amount (CAN$)
3010325	Social Sciences and Humanities Research Council of Canada	2014	$290,503

Role		Completion status [X] Complete
Applicant		

Project title: The Climate Change Imperative: Changing Current Development Paths

Applicant's family name	Applicant's given name	Initials

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Canada

Family name, Given name
Dale, Ann

Funded Research (cont'd)

Org. code	Full name of funding organization	Year awarded (yyyy)	Total amount (CAN$)
1	Canada Foundation for Innovation & BCKDF	2013	$287,500

Role		Completion status ☒ Complete
	Applicant	

Project title	Resource +: An integrated Model for Sustainable Communicaty Development in Canadian Municipalities

Applicant's family name	Applicant's given name	Initials

Org. code	Full name of funding organization	Year awarded (yyyy)	Total amount (CAN$)
1	Pacific Institute for Climate Chage	2011	$140,000

Role		Completion status ☒ Complete
	Applicant	

Project title	Meeting the Climate Change Challenge: Community Response to BC Climate Policy

Applicant's family name	Applicant's given name	Initials

Org. code	Full name of funding organization	Year awarded (yyyy)	Total amount (CAN$)
3010325	Social Sciences and Humanities Research Council of Canada	2009	$1,000,000

Role		Completion status ☒ Complete
	Applicant	

Project title	Canada Research Chair in Sustainable Community Development

Applicant's family name	Applicant's given name	Initials

Org. code	Full name of funding organization	Year awarded (yyyy)	Total amount (CAN$)
3010325	Social Sciences and Humanities Research Council of Canada	2007	$29,650

Role		Completion status ☒ Complete
	Applicant	

Project title	Measuring the Potential of On-Line Tools for Transdisciplinary Research Collaboration

Applicant's family name	Applicant's given name	Initials

Personal information will be stored in the Personal Information Bank for the appropriate program.

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Canada

1. **Research Contributions (2014-2020)**
   Refereed contributions

Books and Monographs

Book Chapters

Dale, A. (2020, in press). Overcoming the terrors of the either/or. In N. Krogman and G. Machlis (Eds.), *The future of sustainability science, scholarship and dducation at Canadian and American universities.* Edmonton, Alberta: University of Alberta Press.

Dale, A. & Leighton, H. (2020). Edge-ucation by design. In D. Wright and S. Hill, (Eds.). *Social ecology: Applying ecological understanding to educational systems for the sake of our planet*. Stroud GL. UK: Hawthorne Press.

Leighton, H. & Dale, A. (2019). Chapter 4: Where living and learning meet: Bringing the classroom into the city. In K. Kremers, A. Liepins and A. York, (Eds.). *Developing change agents: Innovative practices for sustainability leadership.* Montreal, QC: McGill Publication.

Dale, A., Burch, S., & Robinson, J. (2018). Multi-level governance of sustainability transitions in Canada: Policy alignment, innovation, and evaluation. In S. Hughes, E. Chu and S. Mason (Eds.), *Climate change in cities: Innovations in multi-level governance*. Springer, Cham: The Urban Book Series.

Articles in Refereed Journals

Dale, A., Clifton-Ross, J., Hodson, J., Leighton, H., & Bernard, M. (2020). Communicating Environmental Research: Harnessing the Power of Curation. *Journal of Digital and Social Media Marketing*.

Dandar, D., Clifton-Ross, J., Dale, A. & Croft, R. (2020). Showcasing Institutional Research: Curating Library Exhibits to Support Scholarly Communication. *Journal of Librarianship and Scholarly Communication*, *8*(1), p.eP2335. DOI: http://doi.org/10.7710/2162-3309.2335

Newell, R. & Dale, A. (2020). COVID-19 and climate change: an integrated perspective. *Cities and Health,* DOI: 10.1080/23748834.2020.1778844

Newell, R., I. Picketts, I., & Dale, A. (2020). Community systems models and development scenarios for integrated planning: Lessons learned from a participatory approach. *Community Development*, 1-22, doi: 10.1080/15575330.2020.1772334

Hodson, J., Dale, A., & Clifton-Ross, J. (2020). Sustainability issue communication and student social media engagement: Recommendations for climate communicators. *Journal of Digital and Social Media Marketing*.

Dale, A., Clifton-Ross, J. Jost, F., Leighton, H., Hodson, J., & Bernard, M. (2019). Biodiversity and Climate Change Research: Harnessing the Power of Art, Science and Social Media. *Journal of Community Engagement and Scholarship*, Special Edition.

Clermont, H. J., Dale, A., Reed, M. G., & King, L. (2019). Sense of place as a source of tension in Canada's west coast energy conflicts. *Coastal management*, *47*(2), 189-206.

Hodson, J., Dale, A., & Clifton-Ross, J. (2019). Sustainability, deliberative dialogue and ICTs: A case study of a purpose driven dialogic platform. *Javnost. The Public.*

Dale, A., Robinson, J., King, L., Burch, S., Newell, R., Shaw, A. & Jost, F. (2019). Meeting the climate change challenge: local government climate action in British Columbia, Canada. *Climate Policy (20180816)*, 1-15*,* doi: 10.1080/14693062.2019.1651244.

Clifton, J., Dale, A. & Newell, R. (2019). Frameworks and models for disseminating curated research outcomes to the public. *Sage Open, 9*(2), 1-13. doi:2158244019840112.

Jost, F., Dale, A., Newell, R., & Robinson, J. (2020). Evaluating development path changes using a novel climate action assessment framework in three municipalities in British Columbia. *Environmental Science and Policy,* 114, 410-421.

Jost, F., Dale, A., Newell, R., & Robinson, J. (2020). Climate action assessment in three small municipalities in British Columbia: advancements vis-à-vis major neighboring cities. *Current Research in Environmental Sustainability,* 2, 100010.

Jost, F., Dale, A., & Schwebel, S. (2019). How positive is "change" in change? A sentiment analysis. Environmental Science & Policy, 96, 27-36.

Newell, R., Dale, A., & Roseland, M. (2018). Climate action co-benefits and integrated community planning: Uncovering the synergies and trade-offs. *The Intrnational Journal of Climate Change: Impacts and Responses, 10*(4), 1-23.

Moore, A., King, L., Dale, A., & Newell, R. (2018). Toward an integrated framework for development path analysis. *Ecology and Society*, *23*(2), 1-13. Doi:10.5751/ES-10029-230213.

Hodson, J., Dale, A., & Clifton, J. (2018). Sharing sustainability: A content curation case study of Canada Research Connections. *Journal of Digital & Social Media Marketing*, *6*(3), 198-210.

Hodson, J., Dale, A., & Petersen, B. (2018). The Instagram #climatechange Hashtag Community: Does it Impact Social Capital and Agency? *Interdisciplinary Environmental Studies, 12*(3/4), 17-35.

Dale, A. (2018) Environmental Ethics and Sustainability. In D. Poff D and A. Michalos (Eds.) *Encyclopedia of Business and Professional Ethics*. Springer, Cham.

Potvin, C., Burch, S., Layzell, D., Meadowcroft, J., Mousseau, N., Dale, A., ...Slawinski, N. (2017). *Re-energizing Canada. Pathways for a low carbon economy.* Montreal, QC: McGill University. Retrieved from http://www.sustainablecanadadialogues.ca/pdf_2017/ReEnergizing_Final.pdf

Potvin, C., Aitken, S., Anctil, F., Bennett, E., Berkes, F., Byrne, J., …Wright, T. (2014). *Acting on climate change: Solutions from Canadian scholars*. Montreal, QC: McGill University. Retrieved from http://www.sustainablecanadadialogues.ca/files/PDF_DOCS/SDC_EN_30marchlr.pdf

Potvin, C. et al. (2017). Excerpt of acting on climate change: Solutions from Canadian scholars. *The Journal of Environment Investing 6*(1), available from http:www.thejei.com/excerpt-from-acting-on-climate-change-solutions-by-canadian-scholars/

Bieler, A., Haluza-DeLay, and A. Dale. (2017). A national overview of climate change education policy: Policy coherence between subnational climate and education policies in Canada (K-12). *Journal of Education for Sustainable Development*.

Potvin, C., Sharma, D., Creed, I., Aitken, S., Anctil, F., Bennett, E., …Wright, T. (2016). Stimulating a Canadian narrative of hope for climate. *FACETS*, *2*, 131-149.

Dale, A. (2015). Prioritizing policy. Protecting nature by ensuring that the law is for the land. *Alternatives Magazine*, *41*(1), 77-79.

Newell, R., Dale, A., Herbert, Y., Duguid, F., Foon, R., & Hough, P. (2015). Trans-disciplinary Research: An Academic-Practitioner Partnership Investigating the Relationship between the Cooperative Model and Sustainability. *RIMCIS-Interdisciplinary and Multidisciplinary Journal of Social Sciences*, *4*(1), 23-53, doi: 10.17583/rimcis.2015.0.

Newell, R., & Dale, A. (2015). Meeting the climate change challenge (MC^3): The role of the internet in climate change research dissemination and knowledge mobilization. *Environmental Communications* (ahead of print), 1-20.

Potvin, C. et al. (2014). *Acting on Climate Change. Solutions from Canadian Scholars*. McGill University.

Newell, R., & Dale, A. (2014). Mapping the complexities of on-line dialogue: An analytical model. *Forum: Qualitative Social Research,15*(2), http://www.qualitative-research.net/index.php/fqs/article/view/2040/3647.

Newell, R., & Dale, A. (2014). Representation cartographique des complexites d'un Dialogue en ligne. Une technique de modelisation analytique. *Approches inductive sur Erudit*, *1*(1), 1-29.

Dale, A., Newman, L., & Newell, R. (2014). Patterns of our Footsteps: Topohillia, rhythm, and diversity in urban landscapes. *Spaces and Flows: An International Journal of Urban and ExtraUrban Studies*, *4*(2), 85-93.

Shaw, A., Burch, S., Kristensen, F., Robinson, J., & Dale, A. (2014). Accelerating the sustainability transition: Exploring synergies between adaptation and mitigation in British Columbian communities. *Global Environmental Change.*

Burch, S., Shaw, A., Dale, A., & Robinson, J. (2014). Triggering transformative change: A development path approach to climate response in communities. *Climate Policy*, 14(4), 467-487.

Dale, A. (2014). Agency: Individual 'Fit' and Sustainable Community Development. *Community Development Journal,* 49(3), 353-503.

Refereed Scholarly and Professional contributions, Publications and Reports

Re-energizing Canada. Pathways for a Low Carbon Economy, Lead Author for Governance Section, March 2017.

Dale, A., Holden, M., Robinson, J., Sheppard, S., & Moore, A. (2015). Local Government Responses in BC, climate change adaptation and mitigation. Common Ground Conference, Vancouver, BC.

Non-Refereed Contributions

Dale, A. (2018). *Edging Forward*. *Achieving Sustainable Community Development.* Nova Scotia: Fernweh Press.

Dale, A., Foon, R., Herbert, Y., & Newell, R. (2015). *Community Vitality: From Adaptation to Transformation.* Nova Scotia: Fernweh Press.

Dale, A., Newell, R., Herbert, Y., & Foon, R. (2015). The Solutions Agenda. A Call to Action For and By Canadians, http://www.changingtheconversation.ca/thesolutionsagenda.

Hanna, K., Seasons, M., Dale, A., Filion, P., & Ling, C. (2014). Long-Term Climatic Planning No Longer Works. Plan Canada, 26(2): 26-35.

Websites
[www.mc-3.ca, www.crcresearch.org, www.e-dialogues.ca, www.changingtheconversation.ca]

Forthcoming Refereed Contributions

Clermont, H., Dale, A., King, L., & Reid, M. (in press). The role of scientific evidence in Canada's West Coast energy conflicts. *Journal of Community Engagement and Scholarship.*

Hodson, J., Dale, A., Jost, F., & Clifton-Ross, J. (2020, submitted). Social media use, Perceived knowledge and content engagement: The paradox of knowledge, trust and online behavior. *First Monday*.

Hodson, J., Dale, A., & Clifton-Ross, J. (2020, submitted). Sustainability, deliberative dialogue and moderation: A case study of a purpose built dialogic platform. *Javnost: The Public*. 30pp.

Jost, F., Dale, A., & Newell, R. (2020, in revision). CoLabS: A collaborative space for transdisciplinary work in sustainable community development. *Heliyon*.

Noble, M., Leighton, H., & Dale, A. (2020, in review). Stepping toward a sense of place: A choreography of natural and social science. *International Journal of Sustainability in Higher Education.* Special issue, "Navigating Paradoxes in Sustainability Education" https://www.emeraldgrouppublishing.com/ijshe.htm.

Moore, A., Dale, A., Robinson, J., & Newell, R. (2020, submitted). An assessment framework for local government actions to evaluate development path change.

2. Other Research Contributions

I continue to work closely with the Sustainable Canada Dialogues project, led by McGill University. I am also on the science committee for the Sustainable Environmental Policy Network (SEPN) led by the University of Saskatchewan and am a collaborator on four other SSHRC-funded projects submitted to different SSHRC funding programs.

3. Most Significant Career Research Contributions

1. Three peer-reviewed journal articles on the CRC research themes of place, scale and limits were published in Tier I journals; a fourth on diversity. In addition to my research projects, I have built four online tools for use by communities – a) e-Dialogues, b) a template for integrated community sustainability planning, c) a community vitality tool, and d) a case study tool; and there are now over 70 social science case studies published on diverse topics ranging from sustainable infrastructure, governance, long-term planning scenarios to community engagement strategies, to name a few.
2. My work on virtual real-time conversation designed to contribute to civic literacy and public forums is unique in the country, as well as peer-to-peer learning exchanges. e-dialogues are now being used by a number of students as an emerging research methodology for data collection. By pioneering online inquiry, we are developing new ways of conducting e-surveys, e-focus groups and novel ways of online interviewing. Our project on exploring the integration of modern museum curatorial practices for the purposes of research curation, and experimenting with the use of social media for research dissemination has concluded with 5 peer reviewed journal articles and a best practices guides for academics, https://www.crcresearch.org/featured-project/how-curate-your-research-online
3. Several peer-to-peer learning exchanges have been led on BC climate action, bringing together government staff, municipal innovators, researchers, community practitioners, activists and policy experts, resulting in the publication of a policy agenda for Canadian decision makers.
4. Five key policy documents have now been published. *A Policy Agenda for Canadian Municipalities* (2011), distributed to all Canadian municipalities by FCM; *An Action Agenda for Rethinking Growth and Prosperity*, distributed across the country, accompanied by 2-page bilingual briefing notes; *Climate Change Adaptation and Mitigation: An Action Agenda for BC Decision Makers; The Solutions Agenda*, and most recently (2019) *Biodiversity Conservation. A Call for Action for Canadian Decision-Makers*.

4. Career Interuptions and Speical Circumstances – n/a

5. Contributions to Training

Since 2003, I have supervised over 100 students. My students have a 98% successful completion rate. I recently supervised a Banting Fellow, Dr. Rob Newell who has just accepted a research associate with the University of the Fraser Valley. All of my post-docs have gone to obtain tenure at other post secondary institutions. I encourage students to use my research on e-Dialogues as a unique data collection and online focus group methodology which gives them experience in leading-edge research dissemination; 20 student-led e-Dialogues have taken place. I work with my students to ensure that their research, where appropriate, is policy-relevant and grounded in the real world. In the interests of timely research diffusion, I encourage them, upon thesis completion, to publish a journal article and a case study, using our online case study tool. Four of my students have published in well-known peer-reviewed journals and 10 have published a summary of their research online. My research program has engaged over 9 students as RAs and I have attracted 5 doctoral candidates and 3 post-doctoral scholars to work with me. I have encouraged my students to publish in my book compilations (4 of whom have published successfully), and have negotiated research time from the federal government for two to continue to work on my research projects, as research collaborators.