SFU ACT Adaptation to Climate Change Team

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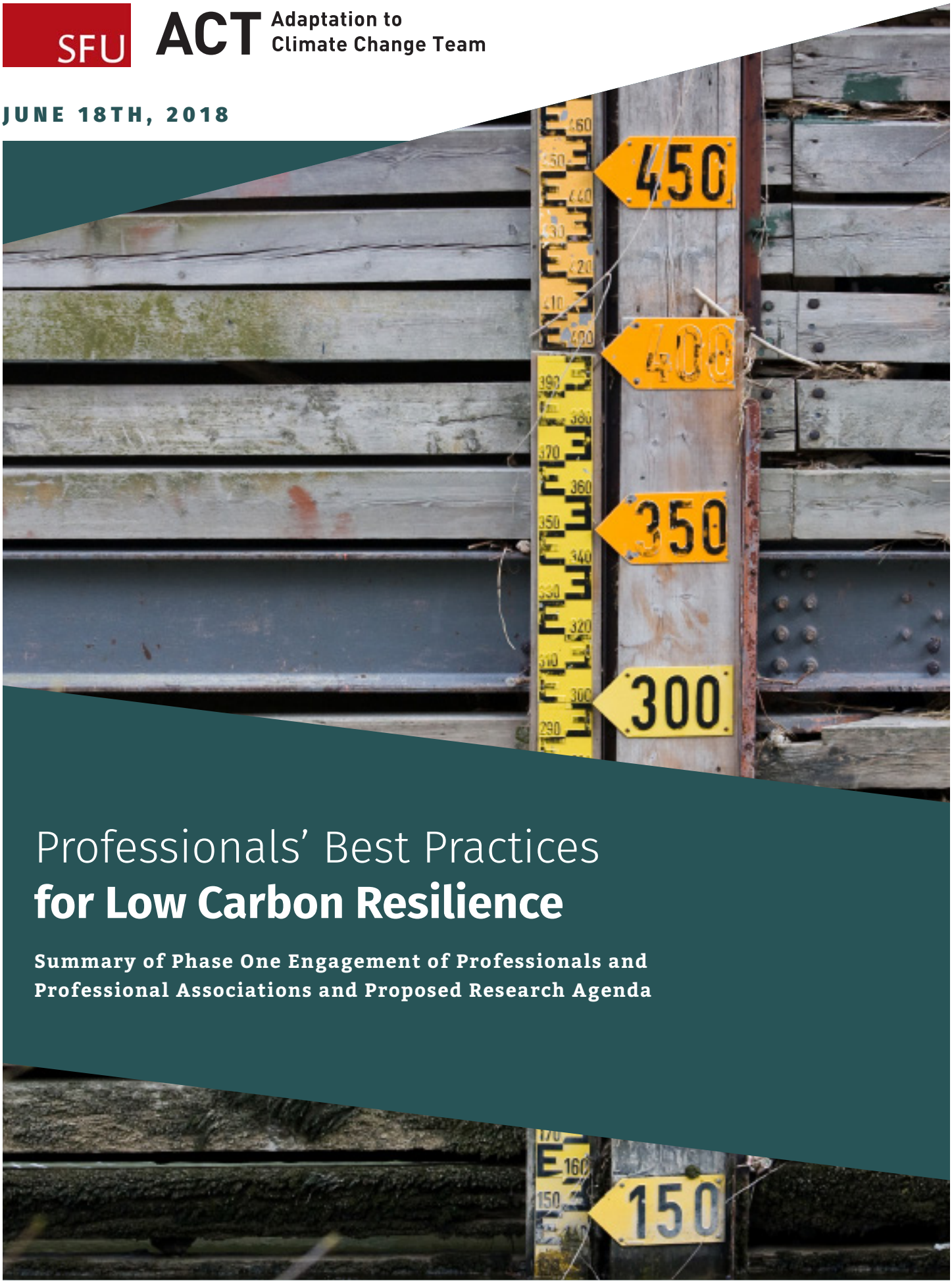

Professionals' Best Practices **for Low Carbon Resilience**

Summary of Phase One Engagement of Professionals and Professional Associations and Proposed Research Agenda

ACKNOWLEDGMENTS

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INTRODUCTION

Climate change is causing a variety of impacts, many of which are projected to increase in duration, magnitude and severity. There is widespread recognition that we must plan responses to these impacts (adaptation), some of which are now inevitable, and that reducing greenhouse gas emissions (mitigation) is crucial if we are to minimize them. Typically, mitigation and adaptation have been addressed separately; however, integrating them through low carbon resilience (LCR) measures can save time and resources, increase returns on investment, improve access to funding, and generate economic, environmental, social, and health co-benefits.

In the spring of 2018, ACT (the Adaptation to Climate Change Team) at SFU hosted a series of three meetings with professionals and professional associations (provincial and national) to engage participants in discussion about the role of professionals and associations in championing and advancing LCR approaches. The objectives of these sessions were to:

- Give an overview of the ACT Low Carbon Resilience (LCR) project and its process
- Learn about the concept of LCR
- Discuss LCR demands on professionals & the roles of professional associations
- Explore potential cross-cutting and profession-specific needs or approaches

Participants were invited into facilitated discussions that explored demands faced by different professions when integrating LCR into their areas of work. They also considered the similarities and differences across professional associations, and between provincial and national associations, that impact their opportunities to advance LCR. This provided insight into:

- Current issues affecting the ability to apply an LCR approach, relating to:
  - Mindsets & beliefs

  - Communication & language
  - Translation of aspiration into action
  - Collaboration and alignment across professions & sectors
  - Key drivers/enablers
  - Mechanisms for integrating LCR
- The specific contexts of different professions and professional associations
- How the interests, capacities and structures of professional associations might be supported to advance LCR approaches.
- Needs and opportunities across professions, along with specific examples that may be of interest to ACT in the next phase of the project.

This report synthesizes themes and findings from this initial phase of engagement and provides suggestions for ACT's research and development agenda over the summer of 2018 and beyond.

1. SUMMARY OF THEMES AND FINDINGS

Participants were engaged in wide-ranging discussion of the trends, opportunities and challenges faced in advancing LCR approaches in their spheres of influence. The following is a summary of key themes and findings.

a. Mindsets & beliefs

Challenges arising from conceptual separation of adaptation from mitigation

Discussions reflected the traditional separation of climate change adaptation and mitigation, conceptually and in practice. Only a few professionals and associations that participated in the ACT workshops reported intentional integration of the two streams of climate action. This is unsurprising, as these domains have typically been addressed individually, with strong silos around bodies of knowledge and action pertaining to one or the other. Participants referred to the role of IPCC framing in creating these entrenched distinctions, and the difference that presenting the two as parallel or integrated streams of action for responding to climate change could make in people's perceptions. A degree of territoriality has existed around each area, which can serve to pit one against the other rather than providing incentives to seek the co-benefits that are inherent to addressing the two together.

However, there was also reference to a deeper systemic issue, which is that there are still fundamental challenges associated with advancing work around climate change at all, let alone the integration of adaptation and mitigation.

Differing underlying beliefs/perceptions about adaptation/mitigation

A number of underlying beliefs contribute to the separation of the two streams of action. In some circles, focusing on adaptation has been perceived as "giving up" on prevention of climate change through mitigation, or at least as maintaining the status quo. In part due to the fact that climate change action initially focused almost exclusively on mitigation, adaptation can sometimes be pushed in an effort to "balance the scales," rather than finding opportunities for added value in considering the two approaches together. In contrast, there are also those who have long considered that "good" or "smart" adaptation includes mitigation, and that this approach is both prudent and common sense.

The case for LCR can also be made from a moral standpoint. The highest per capita emitter countries also tend to have the most resources available for investment in adaptation and can therefore rely on this to offset the climate change impacts for which they are in large part responsible, diminishing the sense of urgency around emissions reduction. More impoverished regions, often the lowest emitters, will face the brunt of climate change impacts yet have the least resources for adaptation. It is therefore imperative that high per capita emitter countries like Canada prioritize mitigation and embed it into adaptation planning and other development approaches.

b. Communication & language

The language of climate change

Discussions revealed awareness of the need to adapt language to a variety of target audiences, and that using the language of climate change is often not the most effective way to reach people. Terms like risk, impacts, benefits, resilience and sustainability were generally thought to be more accessible/relevant. However, it was also suggested that it may not be ethically responsible to avoid using direct references to climate change; rather, it may be important to use this language as recognition of the need to address this issue. Also, the type of language used can convey unintended messages – for example, "attack, defend, retreat" can imply combative intentions, rather than opening the way for collaborative approaches that bridge interests and needs.

Knowing the audience

Participants noted that it is important to work with stakeholders to properly understand their perspectives and find solutions that address priorities and needs beyond climate change.

c. Translation of aspiration into action

Awareness and action is improving, slowly

In a number of the sectors and professions we engaged, awareness of climate change has been growing over time. Participants saw the value and logic of LCR approaches; however, there were not many examples of these being put into practice. Climate change actions have been advancing due to champions, first hand experiences of extreme weather impacts, and increasing understanding of the costs and risks of inaction. However, awareness and action vary greatly within and across professions, with participants outlining significant differences in opinion and experience about its degree of importance and whether it is being addressed adequately. Most of the discussion was about climate change in a general sense, or about adaptation and mitigation as separate concepts; LCR approaches were minimal or absent.

Lag time between understanding and practice

Participants observed that there have been many advances in science, and in development and communication of information and resources, yet this does not lead directly or automatically to action nor application of what is known or enabled through tools, policies, regulations, etc. Translating from understanding into practice takes time, investment, learning and leadership. Professionals often feel overloaded with information and concepts and need practical support on how to move things forward in their specific contexts and decision-making environments.

Creating enabling conditions for changes to practice

Hierarchies of policy, decision-making and leadership at the community level and across levels of government enable or constrain changes in practice. These systems and relationships need to be understood and engaged with in order for change to happen. Decision-making, policy-making and funding are not necessarily aligned with desired action on the ground. Development of relationships with decision-makers is needed to introduce alternative pathways and align contextual factors to allow for new ways of acting. This is particularly true in local planning contexts, where revisions to community plan updates tend to happen slowly or infrequently.

d. Collaboration and alignment across professions & sectors

Lack of understanding of issues, options and/or connections is a barrier

The degree of awareness among professionals, and at all points along the "chain" of influence and decision-making, is a key factor affecting the uptake of LCR approaches. While certain professionals may contribute a depth of knowledge on climate change and actions needed, there is also a need for clients, e.g., local governments, and/or those they are responsible to such as federal or provincial governments or citizens to better understand the issues and potential solutions. Without this understanding, advancing LCR will face significant barriers.

Lack of communication and shared understanding across professions and sectors

Different terminology and language in different professions or regions can make collaboration and alignment difficult. As well, levels of education about climate change and LCR differ greatly within and across professions.

More generally, some noted the absence of a shared narrative amongst professions, and emphasized a need for understanding of the roles for each profession, as well as articulation of how we view the past, present and future, e.g., "What are we doing and why are we doing it?" "How do the most engaged people move forward?"

Limited collaboration and alignment among professionals & across sectors

This siloed thinking among professions leads to lack of awareness of the parts of the system outside specific roles and projects, and the ways these are interconnected, for example, the interconnections between zoning requirements, agricultural uses, biodiversity and infrastructure engineering in decisions about development and infrastructure planning. These types of processes typically involve many different professionals who are often not coordinated in ways that align their skills and drive effective collaboration. The relative influence of different professions may also impact the degree to which different perspectives are included.

e. Key drivers/enablers

Understanding and practice of accounting for financial risks

It was noted by numerous participants that growing awareness and evidence of the financial risks posed by climate change, especially increasingly costly damages caused by flooding and other extreme weather events, is shifting climate change from an environmental to a business issue and resulting in the need to act being taken more seriously. The work of Chartered Professional Accountants (CPA) Canada has been helping to advance this understanding and engagement amongst financial professionals. This shift has other benefits for climate action, including an increase in credibility due to trust in business experts and their evaluation of and perspectives on priorities for action.

Policy or regulatory incentives

When climate change has become a compliance issue through policy or regulation, this has often been accompanied by an increase in attention and resources. While the

transition to compliance can be challenging, this has opened doors to significant shifts in practice. There is a lag time, however, between implementing such changes and development of the knowledge, skills and tools required to adapt in practice. Examples include a provincial mandate for development of 10-year adaptation and mitigation plans proposed in 2016 for BC's Public Sector Organizations, and the City of Vancouver's green building policy for rezoning. The latter is a good example of LCR, as the policy includes components for GHG emissions from reduced energy use (mitigation) and assuring buildings are adapted to temperatures in 2050 summers (adaptation). It also includes the example of using wood as a construction material to sequester carbon (mitigation) and strategically managing forests to prevent fires (adaptation).

f. Notable mechanisms for integrating LCR

Codes or standards

Some professions are beginning to embed climate change considerations into their professional standards, either implicitly, e.g., in line with a professional's responsibility to exercise a "duty of care" in their practice, or by explicitly including language referring to climate change in professional standards and codes of ethics.

Some professions have been developing standards of practice related to climate change, such as the Canadian Society for Landscape Architects' climate change adaptation position paper,[1] the Canadian Institute of Planners' climate policy and model standard of practice,[2] and Engineers and Geoscientists BC's Energy Step Code. The latter was considered an LCR example as it aims to improve energy efficiency and reduce emissions, and should result in longer-lasting and more resilient buildings

In the realm of policy or planning, a number of participants highlighted the differences in performance-based versus prescriptive standards. Performance-based standards make more sense in some contexts and can be valuable for enabling creativity and innovation that is tailored to a specific purpose. This can also allow for adaptation as technologies and conditions change. However, there is also a place for prescriptive standards in driving change, particularly in the context of smaller communities that may lack the capacity to evaluate alternatives.

Tools & training

A number of tools and training resources include consideration of climate change. These are currently mostly focused on adaptation and mitigation as separate approaches, but could potentially be used as models or adapted to integrate LCR considerations. Some examples include (see appendix B for more):

- CPA Canada training and tools for integrating risk and impacts into accounting practices
- Energy Step Code (BC)
- The Municipal Natural Assets Initiative and Green Infrastructure Ontario are both integrating the value of natural assets into municipal accounting practices, with potential for LCR as ecosystems both sequester carbon and reduce emissions, while absorbing stormwater and reducing urban heat

1 http://www.csla-aapc.ca/climate-change/climate-change

2 https://www.cip-icu.ca/ClimateChange#

- Canadian Society of Landscape Architects: Global Accord on climate change adaptation
- Engineers Canada
  - PIEVC Protocol[3]
  - Infrastructure Resilience Professional Certification
- Canadian Institute of Planners
  - Case studies, adaptation plans, resource library

Participants noted that the existence of tools and information alone does not necessarily lead to change. Investment in translation of information, or training in the use and application of tools, is essential for uptake of new practices and varies across professions.

2. FEATURES AND ROLES OF PROVINCIAL AND NATIONAL ASSOCIATIONS THAT INFLUENCE OPPORTUNITIES TO ADVANCE LCR

Each professional association has its own structure, capacity and pathways for influence. The following is a review of key factors influencing the ways provincial and/or national professional associations could play a role in advancing LCR.

Capacity

Most associations rely predominantly on volunteer resources to support initiatives around climate change. Having dedicated staff capacity, or resources allocated specifically to this purpose, greatly benefits their options. In some associations, committees focus specifically on climate change, while in others it may be housed under public relations, for instance, and therefore does not have the same type of organizational commitment.

Organizational structure

Direction within an association may be affected by the organization's structure and membership. For example, a national association's Board of Directors may be composed of provincial association representatives, which can lead to more focus on inter-provincial issues than would be the case if the board was composed of individual members. As well, the direction of an association may differ depending on its membership, e.g.:

- Members are from a cross-section of professionals in a practice area (e.g., Canadian Water & Wastewater Association (CWWA), Federation of Canadian Municipalities (FCM))
- Members are organizations (e.g., CWWA) vs members are individual professionals
- Membership is voluntary

3 The Public Infrastructure Engineering Vulnerability Committee (PIEVC) of Engineers Canada developed the "PIEVC" protocol to assess vulnerabilities of infrastructure to extreme weather and future climate change and therefore enable better planning and design of climate-resilient infrastructure. See https://pievc.ca

- Membership is mandatory
- If there is a direct connection between decision-makers and members

Mandates

The areas of responsibility of an association influences the ways that it can contribute to advancing LCR approaches and practices:

Typical mandates of the provincial associations include a mix of:

- Accreditation, regulation and enforcement of the profession
- Direct services to members (e.g., insurance programs)
- Continuing professional development

Typical mandates of the national associations include a mix of:

- Accreditation of post-secondary programs
- Advocacy on behalf of their profession (credibility, building reputation)
- Advocacy on particular issues, especially at interprovincial/national/cross-sectoral levels
- Continuing professional development (CPD)
- National conferences
- Technical or practice focus (e.g., CWWA) vs professional focus

The locus of action tends to be at the provincial association level. There are varying degrees of interaction between provincial and national associations, depending on the profession. Sometimes national associations provide support to provincial associations, e.g., developing targeted curricula/training that provincial members can access.

Theories of change & leadership

Different professions, and professional associations, hold different theories about how change happens. This is reflected in the way they engage with issues – for example, some engage more routinely as leaders, driving change forward, while others hang back and follow the example of others. Some engage at multiple levels of the system (e.g., policy, decision-making, programs, skills, tools, membership, public awareness, etc.) while others focus in on just a few levers of change. This is due to many factors such as culture, capacity and the status of the profession.

Status of the profession

Some professions are more well-established and recognized than others. This translates into a different focus for some associations relative to others. For example, some have a focus on advocacy and building the reputation of the profession on behalf of members, while others concentrate on providing services, tools and education to members. The relative credibility and status of different professions also has implications for their degree and sphere of influence in the professional world and as well as for policy development and decision-making. Professions with the most influence are sometimes given leadership of projects and initiatives, resulting in a greater hand in the direction and form that work takes. For instance, engineering has a disproportionately large presence in the professional and policy worlds due to a number of factors, including size of membership (approximately 290,000 engineers in Canada, compared

to around 2,000 landscape architects), the length of time it has been a regulated profession, track record of advocating for perspectives of the profession and its members, etc.

Education

Associations play different roles in education, training and CPD, and while some have developed and offered climate change-related training, others have not. CPA Canada and Engineers Canada have well-developed training programs, while others have offered opportunities through conferences. None of the associations that participated in the discussions require CPD on climate change for members, while ethics, and professionalism standards and training were offered and/or required by all of them.

Not all professions and their associations have a shared understanding or degree of comfort with the subject of climate change. There is wide variation within and across professions of levels of understanding and/or practice. New members are an influencing factor, as it makes a difference if practitioners have knowledge about, or awareness of, climate change issues and solutions coming in (e.g., through post-secondary education), or if this needs to be provided. A number of associations are involved in setting requirements for accreditation of post-secondary programs where this type of training could, in theory, be offered if it is not already.

Professional standards

While all associations have some form of a code of ethics and/or "duty of care" that sets the standard for professionalism in the field, the language of climate change is not generally specified in most associations. The Canadian Institute of Planners has a policy requirement that its members consider climate change, but there is a question of how to ensure this is operationalized. This policy is currently being comprehensively updated. Embedding the imperative to consider climate change issues in policy or standards is therefore a first step for associations, but there is also a need to provide supports and requirements so that professionals have incentives, and guidelines on how, to translate this into practice.

3. SUMMARY OF NEEDS & OPPORTUNITIES

The following table summarizes needs and opportunities for advancing LCR identified during the three discussions, indicating which apply to a specific profession, the role of professional associations in general, or are cross-cutting among professions. These possibilities are wide-ranging and will be used to inform the ACT LCR project in the long-term. Specific recommendations for near-term action are presented in the following section.

Category	Need/Opportunity	Profession-specific	Association-level	Cross-cutting
Standards & Guidelines	Embed in professional standards and association policies • Codes of ethics, "duty of care"		X	
	Monetize risk & mitigation • Carbon pricing • Energy costs • Road pricing • Insurance – make case for action based on high enough costs of inaction (e.g., insurance premiums in floodplains) • Multi-criteria decision matrix to monetize risks, benefits across sectors • Make costs of business as usual explicit (in terms of risk, financial, reputation, health, etc.) • Insurance Bureau of Canada – look at ways to integrate LCR incentives into their research on appropriate response to increasing flood risk in Canada	X		X
	Embed LCR in processes of developing guidelines • Get specific: where are professionals giving advice and input into guidelines of various types? How to work LCR ideas into those processes? How to get these ideas into key leverage points on the ground?	X	X	X
	Translate general (LCR/climate change) guidelines into specific contexts (particular area of practice, or profession) – make it directly practical	X		
	Provide specific guidance for standards and best practices • E.g., should we use 2050 as a standard timeframe for planning			X
	Best practices (on mitigation, with potential for LCR): e.g., Energy Step Code • Province and developers collaborated on development • Research done on best way to implement • Will be integrated into the provincial Building Code			X
	Performance-based vs prescriptive standards • Strengths and weaknesses of each? In what ways/contexts is one or the other useful for LCR approaches?			X

Category	Need/Opportunity	Profession-specific	Association-level	Cross-cutting
Influence policy & regulation	Provincially-mandated climate action plans (e.g., for local governments or PSOs)			X
	Compliance, policy, rules influence development and drive change			X
Collaboration & integration across sectors & professions	Clarify shared language across professions • Consistency needed in education/awareness/language across professions, e.g.: – Green infrastructure vs blue-green infrastructure – Use of the term "mitigation" in climate change (emissions reduction) vs disaster management (risk reduction) • Opportunity: BC Land Summit 2019 (5 professions represented there)			X
	Bring disciplines and professions together to consider interests, values, needs and opportunities as a whole • Consider how to raise understanding among highly influential professions, such as engineering, about the skills and roles of other professions and how/where they can add greatest value to an interdisciplinary/LCR project			X
	Consider how to influence tendering and hiring practices to enable interdisciplinary approaches and increase likelihood of LCR uptake • RFPs • Job descriptions • Decision-making hierarchies		X	X
	Case studies of integrated project examples • Illustrate collaboration processes between professions where they were done well • Real-life case studies, or typical project maps • Create greater clarity about various roles and how they work together	X		X
	Need to build alignment, awareness, relationships & trust across levels of governance & decision-making (including funders) – information and standards alone are not enough, we have to address decision-making hierarchies			X

Category	Need/Opportunity	Profession-specific	Association-level	Cross-cutting
Collaboration & alignment across professional associations	Joint statements • Cross-profession/association joint statement encouraging inclusion of LCR as lens on activities; demonstrate importance, provide examples where it has been done • Could have sub-sections that are relevant to each association and leverage combined efforts • Create combined policy statements and primers that go to decision-makers • Create shared targets/goals to move beyond "feel-good" into action		X	
	Facilitate collaboration & action across associations • Facilitated forums for aligning priorities, resources, action, e.g., roundtables • Leverage the highly skilled volunteer capacity of associations through joint projects, initiatives – can get a lot of value with a small amount of funding • Identify shared interest and willingness to work together by focusing on LCR rather than on areas of competition between professions • Consider who are "must haves", "want to haves", "nice to haves" and be discerning about when/how to engage different groups		X	
	Consider how to work with existing leadership styles of associations/professions to advance LCR approaches • E.g., innovators vs waiting for proven examples		X	
	Coordinate & distribute resources/learning through a hub (e.g., Federation of Canadian Municipalities)		X	
	Further analyze specific roles, capacities & attributes of associations to identify greatest leverage points for influencing professionals in application of LCR		X	
Tools & Resources	Joint resource databases • Some professions have this (e.g., engineers?); build on existing, or create something new? • Make existing resources easily available across professions (e.g., blueprints for publicly funded projects) • Make data accessible (e.g., "climate normal" dataset as baseline)			X

Category	Need/Opportunity	Profession-specific	Association-level	Cross-cutting
Collaboration & alignment across professional associations	Practical & educational guidance resources, e.g., • Lists of "do's" and "don'ts" • Analysis of trade-offs and co-benefits of integrating adaptation & mitigation • Speak to interests of the audience (e.g., human health is strongly valued across all groups)	X		X
	Vulnerability & risk assessment tools • Adapt to an LCR approach • Integrate risk assessment with GHG inventories? • A more entry-level risk assessment tool that incorporates mitigation would be useful, if you don't have resources to follow the PIEVC protocol	X		X
Education & training	Profession-specific training • Enabled by CPD requirements of associations • Peer mentoring • Share resources through professional associations • Use role of associations in development and accreditation of post-secondary programs to ensure all new professionals have LCR training	X	X	
	Cross-cutting training for professionals • LCR 101 and profession-specific training • Natural Resources Canada funding? • Platforms for integrated learning across professions		X	X
	Develop supports for translating LCR standards, guidelines, tools, information, policies, into practice (e.g., capacity-building, practicing, learning about applied uses, etc.)	X	X	X
	Education along the decision-making or project "chain" • Information, guidelines and standards only go so far – ultimately, decision-makers, clients need understanding to support these directions – Local and higher-level leadership – Professionals and consultants – Clients and public • E.g., Greenshores training curriculum as a model – could also deliver to politicians and councils			X

Category	Need/Opportunity	Profession-specific	Association-level	Cross-cutting
	Communication & language • Develop a consistent narrative • Engage credible professionals to speak about progressive options • Use visualization • Develop specific examples of LCR • Translate language for multiple audiences	X	X	X
Issue-based initiatives & short-term opportunities	Coastal resilience • Involves many professions • Promote ecosystem-based and natural-capital focused solutions • Blue carbon approaches • Develop sea level rise risk assessment tool/plan?			X
	Stormwater/green/blue-green infrastructure • Metro Vancouver Integrated Stormwater Management Plans being updated • Asset management plans are interdisciplinary, and municipalities already do asset management planning. Ontario group doing workshops on this.			X
	Public infrastructure • Bring LCR lens to existing, updated and new infrastructure • Provide cost comparison: traditional vs natural capital approach • Provide something staff can bring to council to make the case			X
	Local governments as a leverage point • This is where LCR and implementation of decisions happens – key role • Climate and energy planners – opportunity to raise awareness via these roles? • Redevelopment of urban areas is opportunity to "build back better" with LCR approaches (e.g., grey & black water systems) • Make it easy for municipalities to take strategic, high impact actions – Create clear targets and actions that small municipalities can easily achieve			X

Category	Need/Opportunity	Profession-specific	Association-level	Cross-cutting
Other	Involve non-professional organizations/ groups in this project, e.g.: • Applied science technicians & technologists • Trade associations • Environmental operator certification • Utilities • Universities • Private sector • Chambers of commerce • Municipal administrators • Sustainability professionals • Municipal elected officials			
	Professionals often have the opportunity to make a couple of key changes, instead of making an overall big strategy or plan • Think about what will have the biggest impact in BC in terms of reducing emissions and increasing resilience			
	Additional specific examples/pilot projects are included in Appendix B			

4. SETTING A STRONG FOUNDATION: SUGGESTIONS FOR INITIAL RESEARCH AND DEVELOPMENT AGENDA

The table below outlines some of the short-, medium- and long-term outcomes originally defined for this project, updated based on the outcomes of these recent discussions. In the short term, the project aims to build understanding and examples of capacity, tools, resources and awareness that can support the advancement of LCR approaches and related professional best practices. In the medium term, the goal is to translate these resources into prototypes and pilot projects in the field. In the long term, this work aims to establish the capacity for LCR approaches as common practice while recommending measures that can contribute to an enabling policy environment and producing tangible climate action benefits for communities.

Short-term outcomes	Medium-term outcomes	Long-term outcomes
Awareness & capacity-building Develop/adapt foundational tools/ resources/case studies Collaborative solution design Develop specific sectoral responses Enable collaboration and alignment across professions/sectors/ associations	Prototype LCR approaches • Test concepts in the field • Monitor uptake of knowledge • Update draft resources • Share initial results within and across professions, sectors, with communities (explore needs and values) LCR Pilot Projects • Explore pilot project concepts through focus groups, workshops and research by SFU students • Support design and implementation of pilot projects through partners	Enable and build capacity of professionals to implement LCR approaches Develop policies that facilitate implementation of LCR planning Tangible LCR benefits for BC communities

In the next few months, the ACT, SFU team will work to advance some of the suggestions gathered from this first phase of engagement, to set the foundations for a further 2-3 years of work.

Based on the findings of this first phase, and with consideration of the longer-term intentions of this project, the recommendation is to "start close in," with the biggest resource that is now available to the ACT, SFU team: willing and engaged professionals and their connections to respective professional associations. There are many suggested actions and strategies that extend out into other sectors and shared or individual areas of work, policy and decision-making. This project will create a robust foundation for moving into those areas by equipping and enabling professionals and their associations who are already engaged and can then have a greater, and ongoing,

influence on their respective professions, associations and the places and contexts in which they work.

The following initial steps will be advanced over the summer of 2018 and brought back to these groups to develop next steps in the fall, building a foundation for aligned action moving forward in the next years of the project:

Enable professionals & associations

1. Gather existing resources & tools from engaged professionals/associations
    a. Start with information that is accessible through project participants and put this into a user-friendly database and/or annotated bibliography. This will inform the project, while also creating a useful reference tool for professionals.

2. Review key tools/resources to propose which to adapt to an LCR approach that is practical and applied for professionals
    a. Conduct a scan of some of the specific tools/resources that were repeatedly mentioned (e.g., climate vulnerability/risk assessment, cost-benefit analysis, multi-criteria risk matrix, integrated project maps, etc.), and identify which would be most valuable/feasible to develop into LCR tools and resources.

3. Develop user-friendly materials on the costs, risks, benefits of LCR approaches
    a. Consider how to present information in ways that are directly useful to professionals in their contexts and processes (e.g., in presentations to council; to engage other professionals in their field; etc.).

4. Review policies, standards, guidelines and post-secondary program accreditation requirements in specific professional associations (draw on international examples where applicable)
    a. Based on this review, provide recommendations in the form of guidelines, or whatever is "credible" to specific associations, that can be advanced by professionals to influence internal policies & standards.

5. Develop a draft outline/version of "LCR 101" training
    a. In the fall, get feedback on this training model, and generate ideas for adapting it to be sector-specific. Discuss strategy for implementation through associations.
    b. Also discuss strategy/options for adapting this model and extending it to others "along the chain" (e.g., decision-makers, clients, the public, etc.).

Enable collaboration and alignment across associations & professions

6. Draft a template for a joint statement that could be advanced through professional associations regarding LCR
    a. Consider suggestions above (e.g., could have a shared statement and separate sections for different professions/associations where applicable) to make this most useful/relevant and likely to be advanced through associations.

7. Develop a proposal for collaboratively engaging professionals & professional associations in the next phases of this project

a. Consider existing containers & capacity (e.g., ACTPAC, the BC Professional Associations Adaptation Working Group (PAAWG), FCM) to enhance what already exists.
b. Outline possible objectives of this/these group(s), for review in the fall.
c. Suggest supports that the project and/or other partners may provide to maximize the resources and capacity of participants & associations.

8. Explore options for a shared issue focus in the early stages of developing aligned action around an LCR approach
   a. Do a more focused review/analysis of opportunities participants identified (e.g., coastal resilience; stormwater/green/blue-green infrastructure; public infrastructure; municipal planning) to inform discussion in the fall about one or more areas of shared focus for developing LCR capacity & prototypes.
   b. Develop next steps aligned with the trends, needs and opportunities identified above – i.e., which of these issues offer the greatest opportunities to advance LCR, given areas needing attention, current capacities, barriers, etc.?
   c. Identify case study examples that could in turn be a resource for professionals.

NEXT STEPS

ACT will work over summer 2018 to advance these foundational pieces, and will reconvene the three groups in September 2018 to groundtruth results, develop conclusions and plan next steps. This work will form the basis for a 2-3 year project designed to advance best practices for professionals at all levels on integrated climate action.

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APPENDIX A: **PARTICIPANTS IN PHASE 1 ENGAGEMENT**

ACT Professional Advisory Council (ACTPAC) Meeting

January 25, 2018

Vancouver, BC

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Ted van der Gulik, Former Senior Engineer, BC Ministry of Agriculture, Fisheries & Food; President, Partnership for Water Sustainability, BC
Kathy Lee, Manager, Integrated Resource Planning, BC Hydro
Tamsin Lyle, Principal, Ebbwater Consulting
Hedy Rubin, Grants Administrator, BC Real Estate Foundation
Glen Shkurhan, Principal and Senior Engineer, Urban Systems; BC Water & Wastewater Association
Damian Stathonikos, Acting CEO, BC Real Estate Association
Sue Todd, Principal, SolsticeWorks Sustainability; CPA
Angie Woo, Resilience Lead, Fraser Health
Pamela Zevit, Association of BC Biologists

Provincial Professional Associations Meeting

Co-hosted by the Fraser Basin Council with the BC Professional Associations Adaptation Working Group (PAAWG)

February 27th, 2018

Vancouver, BC

Christine Callihoo, Planning Institute of BC
Deborah Carlson, West Coast Environmental Law
Eliana Chia, Fraser Basin Council
Erica Crawford, Shift Collaborative/ACT (facilitator)
Harshan Radhakrishnan, Engineers and Geoscientists BC
Christopher Raftis, ACT, SFU
Dave Spittlehouse, BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development
Susan Todd, Chartered Professional Accountants of BC
Jim Vanderwal, Fraser Basin Council (phone)

Bev Windjack, BC Society of Landscape Architects
Johanna Wolf, BC Climate Action Secretariat

National Professional Associations Meeting

March 14, 2018

Co-hosted by Federation of Canadian Municipalities

Ottawa, ON

Devin Causley, Federation of Canadian Municipalities
Dana Collins, Canadian Institute of Forestry
Erica Crawford, ACT (Facilitator)
Robin Goldstein, Federation of Canadian Municipalities
Shannon Joseph, Federation of Canadian Municipalities
Colleen Mercer Clarke, Canadian Society of Landscape Architects
Anissia Nasr, Canadian Institute of Planners
Stephen Pope, Royal Architectural Institute of Canada
Daniel Potter, Canadian Institute of Planners
Hiran Sandanayake, City of Ottawa; Canadian Water & Wastewater Association
Beryl Strawczynski, Engineers Canada

In addition, supplemental interviews were conducted with:
Gordon Beal, Chartered Professional Accountants of Canada
Wayne De Angelis, Canada Green Building Council
Jay Wilson, Canadian Electricity Association

APPENDIX B: **SPECIFIC EXAMPLES/PILOT PROJECTS**

ACTPAC:

Tools

- Energy Step Code
  - Will be integrated into the building code (net zero energy emission buildings)
  - Province and developers collaborated on its development
  - Research was done on best way to implement
- Performance-based standards (outcome-based) may work better than prescriptive ones
  - Allow for application of best fit for specific context, and for adaptation as technologies and conditions change
- CPA Canada offers training on adaptation and will develop more tools for how accounting relates to adaptation and why businesses should care
  - The Task Force on Climate-related Financial Disclosures is creating awareness and understanding of material risks of climate change
- Pricing & risk mechanisms, e.g.:
  - Carbon pricing
  - Energy costs (demand for energy efficiency)
  - Road pricing
  - Insurance (e.g.: floodplains/waterfront)
  - More project funding available if you address adaptation and mitigation together
  - Private sector (esp. larger corporations) beginning to see importance/risk
- Partnership for Water Sustainability in BC has developed tools
- Need to develop integrated climate action tools that guide implementation of LCR for different sectors

Other

- Gibsons is a leader – build on examples of leadership we already have
- Landscape architects have done a scan of other associations' climate actions
- 2019 BC Land Summit - five of the professions are involved here

- 10-year mitigation & adaptation plans now required of BC PSOs – will BC require they be integrated? This would streamline planning and relieve pressure on limited capacity
- Where greenfield development is not an option, it is an opportunity to rebuild better through densification – how to integrate into these processes?
  - E.g.: grey and black water systems – urban densification: match water source with appropriate use

PAAWG:

- Insurance Bureau of Canada is leading research into appropriate financial response to increasing flood risk in Canada (not LCR-based – look at ways to integrate incentives)
- Example of New York's approach to climate adaptation
  - Net present value (NPV) calculation and making the case
    - » http://iopscience.iop.org/article/10.1088/1748-9326/11/10/104007
- Municipal climate and energy planners – is this an opportunity for change, or tokenistic?
- Examples of integrated project delivery exist. e.g., panels of architects and planners looking at development stages together
- Example: Greenshores training curriculum
  - Also delivered to politicians - councils have major influence
- In the US, blueprints from publicly funded projects are available for others to learn from/apply
- The PIEVC framework is quite involved – consider whether this could be adapted to provide a simpler, more entry-level risk assessment approach and include emissions

National Associations:

- Canadian Society of Landscape Architects Global Accord on Adaptation – simple principles that can inspire people and create momentum. Once ratified internally, landscape architects will take to other professions.
- The adoption of asset management practices is promoting a position shift in decision-making towards longer-term thinking (e.g., Asset Management Ontario)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has stated it's no longer acceptable to only look at historic records
- Engineers Canada Infrastructure Resilience Professional Certification: https://pievc.ca/developing-infrastructure-resiliency-certification-program-irp
- Ontario Planning Act
  - Requires planners to think about climate change for plans in development
  - Climate adaptation, mitigation and energy lens

- Additional organizations/stakeholders to include:
  - Utilities, universities, private sector and chambers of commerce
  - Major groups that influence or control agenda, including municipal administrators, sustainability professionals (no formal association)
  - Municipal governments, private companies and utilities
- Municipalities are a leverage point
  - Influencing RFPs and OCPs may be places to make changes
  - How to engage municipal elected officials as a practitioner group
- The City of Vancouver "Green buildings policy for rezoning" includes an embodied carbon reporting component in one of the two compliance paths for rezoning applicants. Effective May 2017, all rezoning in Vancouver must comply with this policy.
- CPA Canada provides resources on their website, including case studies that demonstrate the role CPAs can play in climate change

The Adaptation to Climate Change Team (ACT) in the Faculty of Environment at Simon Fraser University brings leading experts from around the world together with industry, community, and government decision-makers to explore the risks posed by top-of-mind climate change issues and to identify opportunities for sustainable adaptation.

ACT Adaptation to Climate Change Team

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