Climate Change Adaptation and Mitigation
An Action Agenda for BC Decision-Makers

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INTRODUCTION

After considerable inaction at the UN level, jurisdictions at all levels have taken leadership on climate change adaptation and mitigation, including national governments (Germany, Denmark, France and others), states (California, BC, Scotland, Catalonia, Sao Paolo and others), and cities (the C40 group including London, New York, Vancouver, Partners in Climate Protection group including North Vancouver, Whistler, Fredericton, Hamilton, Guelph, Yellowknife and others). After several years and even decades of intransigence on the climate action file, there are increasing indications that the US and China are ready to take on more significant action (Morris et al, 2013; Bloomberg, 2013).

BC is recognized as an international leader on carbon pricing due to its unprecedented revenue-neutral carbon tax. Despite extensive debate that putting a price on carbon would cause economic difficulties, five years later, evidence shows that fuel consumption declined by 15.1 percent since 2008, while the rest of Canada's increased 1.3 percent. BC's economic growth per capita is consistent with Canada's average. In this way, reducing source emissions has increased environmental benefit without harming the economy (Sustainable Prosperity 2012; Government of BC, 2012). Two other significant provincial policies have demonstrated provincial leadership and climate action innovation.

- The 2008 Climate Action Charter (CAC) mandated that signatory local and regional governments become carbon neutral in their operations by 2012. The Charter, a voluntary commitment, also included the measurement of community wide GHG emissions and the creation of compact and energy-efficient communities.
- The 'Green Communities' amendment to the Local Government Act which requires all local and regional governments to include climate change targets and strategies in Official Community Plans (OCP) and Regional Growth Strategies (RGS) (Bill 27).

It has been argued that integrating climate change into decisions now, is far more cost-effective over the long-term, than waiting (Stern Review 2006; NRTEE, 2011). While climate change occurs at a global scale, the sources of greenhouse gas emissions and the impacts of climate change are local. Local governments are, therefore, critical actors in implementing emissions reductions and reducing climate vulnerability. Many leading municipalities in BC have used the provincial climate policies and incentives to politically and/or financially leverage what they are already doing, while others have taken on the climate file because of the provincial legislative framework (Bill 27) and, in addition, the voluntary Climate Action Charter. Generally speaking, local governments have shown an increasing commitment to tackle climate action with strategies and action plans in place, yet the landscape remains relatively 'patchy', with 'best process' an exception rather than a rule (Roberts, 2010). Given the necessity for local government

action, the questions then becomes, how are leading local governments responding to the climate change challenge and what are the key drivers of climate innovation at the community scale?

To answer these questions a research team of notable climate change and sustainability scholars from three of the province's lead universities on climate action was created, with 12 research partners from across the province, and funded by the Pacific Institute for Climate Solutions.

MC^3: A Policy-Relevant Research Agenda

We wrote this Agenda to inform BC decision-makers about the necessary legislative and policy steps we believe need to be implemented to continue the province's leadership and innovation on climate action. Our research and knowledge outreach shows that provincial leadership in creating a level playing field for local governments is critical for continuing innovation over the next three years. Our conclusions are informed by MC^3's 'state of the science', extensive social media outreach across the province, and our engagement with local government practitioners.

The MC^3 project is based on research with over 100 researchers, practitioners, civil society leaders and policy-makers participating in the MC^3 research project — Meeting the Climate Change Challenge in British Columbia. It was led by researchers from Royal Roads, Simon Fraser and the University of British Columbia, with 12 major research partners from the public and private sectors, including the Union of British Columbia municipalities. Researchers conducted a detailed evaluation of 11 leading yet different municipalities across the province to identify the leading innovators and innovations on climate action. The project experimented with ways to spread knowledge and innovative practices more rapidly among municipal staff and decision-makers, through real-time on-line dialogues, live chats, social media, and a peer-to-peer learning exchange held on January 18, 2013. Its conclusions are informed by extensive case study research, linking state of the science with the state of practice; innovative social media data collection and outreach across the province; and engagement with local government practitioners.

This data reveals that provincial leadership is critical for continuing and accelerating innovation over the next three years. Leadership that builds a level playing field, creates incentive programs, and provides support for local governments in their implementation of climate strategies will be critical for leveraging current momentum and advancement on the climate file. Yet, much work remains to be done. Over the next three years intergovernmental cooperation will be crucial. Engaged provincial leadership that works together with regional and local governments to identify strategies and opportunities and that accelerates innovation will be a seminal step.

There is still much to discover about the many co-benefits that emerge between emissions reductions, adaptation planning and the overall development of complete, compact and resilient communities.

This Climate Action Agenda is informed by key findings in the state of climate change science. These findings include:

1. The need for action to mitigate and adapt to climate change is ever more urgent (World Bank 2012; US National Climate Assessment, 2013; Australian Climate Commission 2012).
2. The costs of inaction are increasing. In 2006, the Stern Review on the Economics of Climate Change stated "the cost of BAU (business as usual) climate change over the next two centuries is equivalent to a loss of at least 5% of global per-capita consumption now and forever. More worrying still is when the model incorporates non-market impacts and more recent scientific findings on natural feedback, this total average cost is pushed to 14.4%" (p. 164). More recently, at home, the National Round Table on the Environment and Economy report states, "Climate change has a price tag for Canada. . .it could range from $21 billion to $43 billion per year by 2050, equivalent to 0.8% to 1% of GDP" (2011, p.45).
3. The development of a green economy is a path that balances economic development and action to mitigate and adapt to climate change (United Nations Environment Program, 2011).
4. Local and regional sustainable energy strategies increase the resilience of the energy system while enabling communities to tap into new revenue sources (Energy Savings Trust, 2005).
5. Municipal governments currently have direct or indirect control over approximately 44 per cent of GHG emissions in Canada. In 2006, this represented control over 315 megatonnes (Mt) of carbon dioxide equivalent (CO2e) of a national total of 718Mt. It is estimated that municipalities have the potential to supply between 20 and 55 Mt of emission reductions, equivalent to 15 to 40 per cent of Canada's 2020 emission reduction target (FCM Act Locally Report, 2009).
6. There are an increasing number of co-benefits associated with community action on climate change including public health benefits, lower household energy costs and lower municipal infrastructure and operations costs (City of Calgary, 2009; Smart Growth BC, 2009); and
7. The impacts of climate change are increasingly experienced by homeowners, municipalities and private business, whether it is a flood, a forest fire, a landslide or an avalanche (Institute for Catastrophic Loss Reduction, 2012).

PROVINCIAL SNAPSHOT

British Columbia has emerged as a hub in sustainable development research and practice in the country, due in part to social and political will to meaningfully respond to the threat of anthropogenic climate change. It is also due to a willingness to experiment, at all

scales, with innovative tools addressing water quantity and quality, urban development, complete and compact communities and enabling a green economy. The City of Vancouver's Greenest City Action Plan (GCAP) is the most visible illustration of this; however, other BC cities and smaller, more rural communities are initiating unique innovations.

In MC^3's eleven case studies, we identified climate innovation in rural and urban, small and large, resource-based and economically diversified communities driver of innovation. The critical drivers of innovation, in order of prominence were:

- **Leadership** at multiple scales of government and, importantly, champions in municipal staff and/or Council;
- **Provincial leadership**, notably the voluntary Climate Action Charter, mandating carbon neutral government by 2012 and the Green Communities Act (Bill 27), legislating climate targets and actions into official community plans (OCP);
- **External funding opportunities and intermediary support**, including incentive programs such as Climate Action Revenue Incentive Program (CARIP), the Federation of Canadian Municipalities Green Municipal Fund, and grants and human resource programs such as BC Hydro and Columbia Basin Trust;
- **Mainstreaming climate policies into existing policies and development objectives** (i.e., building code or risk assessment framework);
- **Alternative technologies that are cost effective, cost saving,** and with rates of return for energy efficiency or alternative energy that extend into the future;
- **Baseline community energy and emissions inventories (CEEI) and plans** are generating awareness about municipal and community assets, areas for energy efficiency and cost-savings, and the risks and vulnerabilities to assets and infrastructure; and
- **Visible and tangible effects** of extreme weather events related to flooding, wildfires and landslides lead to planning requirements for more resilience over the long term (e.g., sea level rise).

There are many policies, projects and initiatives underway in BC municipalities, demonstrating ingenuity (i.e., capture of waste heat from storm-water drains in Vancouver; natural capital accounting in the City of North Vancouver), entrepreneurship (i.e., municipal utilities in Revelstoke, Prince George and North Vancouver), organizational changes (i.e., Sustainability Department in Campbell River) and novel partnerships (i.e., BC Hydro's community energy managers, funding and support from Columbia Basin Trust, ICLEI pilot partnerships, University researchers, private sector partners). BC municipalities report on their activities annually through the Climate Action Revenue Incentive Program (CARIP). A complete list of their corporate and community actions is available for 2011 from the BC Ministry of Community, Sport & Cultural Development.

The Charter and CARIP reporting requirements are changing how organizations make decisions and manage risks, most notably by facilitating inter-departmental collaboration, inter-sectoral cooperation and integrating climate change into broader sustainability planning.

- In some communities with Sustainability Departments, such as Vancouver and Victoria, sustainability planners develop emissions and vulnerability reducing initiatives and generate inter-departmental alliances to integrate them within broader corporate and community sustainability goals.
- In communities with less capacity or with less emphasis on sustainability, the climate file is given to an existing staff person, in many cases, with limited time or knowledge.
- BC Hydro-sponsored energy managers located in communities across the province have played a key role in moving the climate file forward.
- In other communities still, such as City of North Vancouver and Dawson Creek, climate mitigation is embedded into broader sustainability goals throughout municipal operations.
- The Carbon Neutral Kootenays, a collaboration among three regional districts and local governments and the Columbia Basin Trust, pooled resources and jointly procured consultants to help develop corporate GHG inventories and emission reductions plans, building capacity among 29 local government and First Nations in the Kootenay region. In this case, even the smallest, most rural communities were brought into BC's climate agenda.

District energy systems (DES) were being implemented in four of the eleven case communities studied. Interestingly, rationales for implementation rarely referred to climate change but instead were encouraged by:

- a desire in North Vancouver to be a leader on district energy systems due to a long history in sustainability planning;
- increasing air quality in both Revelstoke and Prince George and utilizing wood waste at the local mills; and
- increasing the municipal tax base via density in Surrey while creating economic resilience against future fuel price shocks.

This illustrates the importance of integrating climate change initiatives into broader sustainability-related strategies for the municipality.

In the case of North Vancouver, a 'density bonus' incentive was used, bypassing the need to change building code bylaws, requiring that all new development provide options for connecting to the DES. The bonus encouraged developers to include options for energy mini-plants in all new buildings in exchange for increased density in their developments. The 'density bonus' aligned with the

interests of the private sector, with 100% uptake by developers. It should be noted that a lack of density has emerged as a barrier to DES, particularly in communities invested in preserving community character.

Another key finding is that the sheer number of local and regional governments and organizations working together on the climate change challenge. The collaboration and experimentation already occurring on the ground is a metric of success in and of itself. As well, professional associations, financial officers, city engineers, planners and CAOs are beginning to understand the climate imperative. Innovative programs, such as BC Hydro's energy managers, the Columbia Basin Trust's Communities Adapting to Climate Change and the Fraser Basin Council's Smart Planning for Communities are central to local and regional government adopting more innovations and willingness to take more risk in implementing those innovations. This may prove to be crucial to the province's continuing future prosperity and competitive advantage internationally.

The top four barriers for BC municipalities implementing climate change adaptation and mitigation were lack of funding, electoral cycle swings, human resources, and lack of leadership (political and official alignment). In our leading case study communities these barriers were overcome through access to grants and intermediary support, consistent awareness raising, embedding climate change throughout municipal planning and operations, and generating the business case for climate action based on existing priorities.

DELIBERATIONS / CONSIDERATIONS

In order to maintain a leadership position in the face of climate change, BC needs to continue learning from and developing innovative approaches. Many local governments require clarity that climate change remains a provincial priority. Clear messaging and relevant support is required in order to build upon the momentum already generated in the province. Innovative policies and tools exist for reducing emissions and vulnerability, now the challenge is to ensure their implementation in leading communities and to accelerate them in other, second wave communities. Moreover, visible provincial political leadership is needed to stimulate even more expansive and innovative local government action.

The B.C. Climate Action Charter clearly has been a pivotal instrument. 180 of 190 local governments have signed the Charter, and in so doing, have committed to 1) being carbon neutral in respect of their corporate operations for 2012; 2) measuring and reporting on their community-wide GHG emissions profile and 3) working to create complete, compact and more energy efficient rural and urban communities. Across the province, and in the face of acute economic constraints, local governments have reduced GHG emissions, developed local projects to balance emissions, and purchased offsets to compensate for emissions, and, in many cases, developed

financing innovations ranging from carbon funds to regional offset strategies. There is now an strategic opportunity to stimulate further local innovation to engage with local governments and other stakeholders on the next generation of work informed by Charter commitment.

MC^3 identified four critical success factors to be important, in addition to leadership alignment between the elected and staff levels.

- **Systematic frameworks for policy-making and implementation**. Although there is no single blueprint for success for a low carbon future, municipalities that are successful in reducing carbon emissions within a broader low carbon framework also 'measure-reduce-offset' or 'balance-report'.
- **Institutionalization**. The most successful municipalities integrate climate change within a broader sustainability strategy, set sectoral targets, and lead by example in their own administration.
- **Partnering.** Strong and collaborative relationships with government, not-for-profit organizations, citizens, and business and industry are essential. Municipalities which link business through the green jobs / green growth agenda tied to energy efficiency are also achieving greater success.
- **Innovative financing solutions**. Municipalities that have developed innovative financing solutions to tackle energy efficiency and retrofitting issues are leading by example. One emerging strategy is the idea of a green revolving loan fund as a way of achieving on-going energy and GHG savings without requiring annual budgetary approval. Another strategy is carbon pricing.

CLIMATE ACTION AGENDA for LOCAL GOVERNMENTS (2013 AND BEYOND)

MC^3's research clearly shows that a number of local governments have responded strongly to the existing set of policies and incentives, and if they are to take the next steps, they need a second generation policy framework. We are unlikely to reach mandated emissions reduction targets without taking this next step.

Leading local governments have begun to reap the rewards of developing more integrated policy and planning frameworks that encompass climate change targets but go beyond them to include significant social, economic and other environmental benefits (e.g., DES projects). Our evidence suggests that a stronger policy framework would extend the benefits realized by the 11 case studies to smaller and more rural communities and continue to stimulate provincial innovation on the climate file. In this way, provincial climate change policy and leadership are helping to create stronger and more resilient communities across BC, and a second generation policy framework would reinforce this desirable trajectory. What follows is a proposed climate action agenda for

the province related to local government action on climate change, based on the research outcomes from the case study analysis, as well as from the knowledge mobilization engagement including the recent peer-to-peer learning exchange.

1. **Climate Action Charter V.2**: The next provincial Charter needs to build on the successes of this voluntary program, identifying more aggressive targets, goals and monitoring for the implementation of community GHG emissions. An emphasis on green jobs, household energy savings and district energy, for instance, can be used to stimulate a further round of municipal innovation combined with better systems of tracking progress towards achieving those goals, also integrating adaptation measures.

2. **A municipal mandate on adaptation**. Introduce a Bill that requires targets, goals and strategies on climate change adaptation in official municipal plans. Provide provincial support on risk analysis and policy to support municipalities in this effort.

3. Require a **climate vulnerability assessment** as part of any provincially funded infrastructure project. This should be considered an eligible expense as part of the project. The Public Infrastructure Engineering Vulnerability Committee (PIEVC) protocol provides a useful assessment model.

4. **Ongoing legislation to reduce GHG energy and emissions.** Continue to increase and ensure the enforcement of the energy performance requirements in the building code, support building innovation such as the Passive House standard, enable municipalities to finance renewable energy and the creation of municipal energy utilities. Continue to provide support such as model low carbon community bylaws for municipalities. Mandate the creation of standing municipal climate action committees with diverse membership and fixed terms (addressing the electoral cycle challenge).

5. **Expand the carbon tax to industrial production** to stimulate greater innovation and substitution toward renewables. This would cycle $125 million per year back into consumer tax rebates, public transit, and sustainable public infrastructure or, see s.7, the tax could be reframed as revenue-generating, and redirect financing into emissions reducing initiatives.

6. **District energy**. Apply the carbon tax equally to industrial production to stimulate greater innovation and diversion to renewables. The additional revenues would generate $125 million per year (Bruce, 2012) and provide financing options for implementing more District Energy Systems (DES) across the province, concentrating on smaller and rural communities.

7. **Cross-cutting networks**. Broaden the UBC-City of Vancouver Greenest City Scholars program to include all university and all municipalities. This program can be used to build novel networks that bridge traditional and professional silos and stovepipes.

8. **Financing strategies**. Amend the Local Government Act to allow land banking for diverse end uses, including sequestration or managed retreat from vulnerable shorelines; continue to increase the gas / carbon tax; invest in a Better Future Fund (betterfuturebc.ca); reformulate the tax code to reflect land-use planning that results in low carbon communities; encourage the implementation of revolving loan funds and a differentiated "sprawl-tax" to reflect greenfield versus brownfield developments.

9. **Articulate the co-benefits**. Identify the co-benefits of climate change adaptation and mitigation, sustainable development and the green economy, and green jobs, including health outcomes, infrastructure, operational savings and household energy savings.

10. **Regional and Local Governments**. Clarify and strengthen the role for regional governments to coordinate climate change and sustainability work among municipalities; in certain cases, this can increase alignment between provincial policies and local strategies.

11. **Synergize**. Coordinate provincial efforts with relevant national and international initiatives engaging municipalities including Partners for Climate Protection, WWF Earth Hour Cities Challenge, SCI energy labs and others. This will leverage greater incentives and potential supporters for BC municipalities.

12. **Development Paths**. Encourage the transition to more sustainable community development 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 encourages multi-use development. To measure progress, a simple reporting metrics that measures progress away from unsustainable development (e.g., fossil fuel use, poor air quality, influences on obesity) toward more sustainable development paths would lead to towards new community models.

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