



Accelerating the sustainability transition: Exploring synergies between adaptation and mitigation in British Columbian communities



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ABSTRACT

While the focus of government climate change policy in many regions is on mitigation, research shows that integrated approaches, focusing equally on mitigation and adaptation, seen in the context of more general sustainability goals, may ultimately yield more productive outcomes. Since 2008, the province of British Columbia has mandated that local governments be carbon neutral in their own operations and has used a suite of policies, outreach and incentive tools to enable them to do so. The Meeting the Climate Change Challenge project explored eleven leading communities in B.C. to empirically examine how climate change policies and innovations are being framed and considered at the local scale.

In this paper, we examine the synergies and trade-offs between adaptation, mitigation, and sustainability. Our findings suggest that, among leading communities, pursuing an integrated sustainability strategy (rather than a narrow focus on climate change) has the potential to yield benefits for both adaptation and mitigation in the majority of cases. The findings suggest that communities leading on climate innovation in the province have moved beyond a siloed approach in considering mitigation and adaptation. These findings have implications on integrated decision making at the municipal scale and multi-level governance, identifying both the challenges and the benefits inherent in pursuing multiple priorities simultaneously.

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1. Introduction

At all scales, climate change presents complex and uncertain challenges that drastically reduce the likelihood that the goals of sustainability will be achieved (Cohen et al., 1998; Robinson, 2004; Adger et al., 2005). Links between climate change and development have been contentious primarily due to the perception of an inverse relationship between vulnerability and responsibility for emissions reductions (Gasper et al., 2013). However, the IPCC's Fourth Assessment Report (2007) argued for a strong linkage between mitigation, adaptation and sustainable development (Klein et al., 2007; Sathaye et al., 2007). More recently the IPCC's Special Report on extreme weather events makes direct connections between the risk and extent of climate impacts, such as extreme weather, and socio-economic conditions stating that "the interactions among climate change mitigation, adaptation, and disaster risk management may have a major influence on resilient and sustainable pathways" (IPCC SREX 2011, p. 16). Moreover the

Special Report on Alternative Energy devotes an entire chapter to the relationship between development pathways and the strategic use of renewable technologies in transport, buildings, industry and agricultural sectors (IPCC SRREN 2011). These additions to the international science on climate change corroborate previous arguments that unless climate change policies are embedded in social, economic, technological and environmental decisions, which comprise underlying socio-economic trajectories and development paths, it will be prohibitively expensive and disruptive to achieve our climate goals (Nakicenovic and Swart, 2000; Morita et al., 2000; Robinson et al., 2001; Swart et al., 2003).

The common notion that adaptation is inherently local, while mitigation is entirely a global issue, has also come under critical scrutiny. While the emission of greenhouse gases may be effectively governed at the global level, specific mitigation projects are implemented locally, having implications for community-based sustainability priorities. Adaptation at the local level may result in tradeoffs for mitigation by increasing greenhouse gas emissions, and may also best be supported by transfer of funds and technology via supra-national mechanisms. The aspects of adaptation that are deeply local, however, such as climatic and geographic differences, governance systems, public infrastructure

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and the importance of traditional knowledge (Laukkonen et al., 2009, citing: Huq et al., 2006; Satterthwaite et al., 2007), are true of mitigation as well. While a tonne of carbon dioxide reduced anywhere on the planet has the same effect on the climatic system, the design and implementation of mitigation is a deeply local endeavor, contingent on local values, capacities, and governance. Furthermore, mitigation, when embedded with adaptation into broader sustainability initiatives, can yield a suite of co-benefits, ensuring deeper integration with existing planning processes and operations, perhaps enabling a transition toward more sustainable pathways in the process (Burch et al., *in review*). For instance, many energy efficiency strategies contribute to both mitigation and adaptation, which may prove this artificial separation spurious in the long run.

Focusing on making explicit the synergies and tradeoffs between adaptation and mitigation, and reframing the problem from one of emissions and vulnerability to one that has the potential to spur broad-scale sustainability transitions, and technological innovation, shifts the nature of political discourse and scholarly analysis (Revi, 2008). In this framing, path dependent socio-economic and technological trajectories become the units of analysis, rather than simply emissions and vulnerability. What are required are empirical analyses of the drivers, costs, and benefits of a sustainability or linked adaptation/mitigation framing over the traditional climate change perspective. It is assumed here that these types of integrated analyses could reveal important opportunities to achieve multiple objectives at the community scale, while more effectively addressing the real drivers of emissions and vulnerability.

The community scale is the level at which decisions about energy and transportation infrastructure, service and provision decisions, forest and biodiversity protection, agro-fuels cultivation, storm-water infrastructure and natural hazard and flood risk systems play out. All of these policies, some of which are political priorities, are deeply influenced by climate goals and strategies, while also having broader implications for community sustainability. Indeed, long term planning in these realms may have been considered in some communities prior to the advent of the climate change or sustainability discourse (Dale, 2001). Explicit efforts to integrate these various policy realms, however, may offer opportunities to embed climate mitigation and adaptation goals into existing mandates and budgets within municipal organizational structures (Bizikova et al., 2008; Burch, 2011). For instance, the City of Vancouver is in the preliminary stage of linking urban biodiversity, storm water management and climate mitigation and adaptation, achieving synergistic and reinforcing adaptation policies that identify and build upon co-benefits of climate action. Communities face hurdles, however, due to diverse combinations of technology lock-in, policy and institutional rigidities and lack of support and agency among the broader community (Burch, 2010a; Kollmuss and Agyeman, 2002; Lorenzoni et al., 2007; Unruh, 2000; Smit and Wandel, 2006). 'Best practice' approaches for the integration of climate change goals and policies into broader sustainability priorities are being identified globally, but little empirical evidence exists on the ways that integration of climate change and sustainability may offer benefits capable of leveraging existing (or required) political, social, technological community capacity to build overall resilience (Smit et al., 2001; Adger et al., 2004, 2005; Yohe et al., 2007). (For one exception, focusing on the City of Vancouver, see Robinson, 2013.)

Canada's formal withdrawal from the Kyoto Protocol in 2011 placed enormous pressure on provincial and municipal governments across Canada to address climate change, within their own jurisdictions. The Province of British Columbia (B.C.) has demonstrated considerable leadership in this domain. In 2008, B.C. legislated North America's first revenue-neutral carbon tax. This tax is intended to help the province meet ambitious emissions

reduction targets, including the goal of reducing total provincial greenhouse gas emissions by 33% by 2020 and 80% by 2050. This tax and other climate-related policies in B.C. have prompted mitigation and adaptation actions at the local level. As such, municipalities in the province have become a compelling 'living laboratory' in which to investigate the conditions, actors, knowledge and new governance required for municipalities to take action on climate change.

Local scale or community sustainability requires rapid and significant responses to the threat of natural and anthropogenic change, climate and otherwise. Little empirical evidence exists however, that points to the types of and extent to which net positive effects, or co-benefits, can be attained with a broader sustainability framing.

By analyzing data gathered in 11 case study communities across the Canadian province of British Columbia, as part of the "Meeting the Climate Change Challenge (MC³)" project, for the purposes of this paper we ask the following three questions: (1) what, if any, are the benefits of embedding climate mitigation and adaptation action into a sustainability framework at the community scale; (2) how is this initiated in practice; (3) and in what ways is this shaped by community partnerships and interactions between both state and non-state actors at multiple scales (see www.mc-3.ca)? The first question pertains to the issue of framing, the second addresses drivers, and the third pertains to governance. Ultimately, these features are explored for their potential for more broad-scale transformative changes in underlying development paths.

The section that follows explores the common dichotomy between adaptation and mitigation, and provides theoretical underpinnings for uncovering the common roots of adaptation and mitigation in the underlying development path. Section 3 describes the goals of the MC³ project and the overall context in the Province of British Columbia (B.C.). Section 4 briefly describes the comparative case study methods used to investigate the relationships between sustainability, adaptation and mitigation in eleven case study communities in the MC³ project. Section 5 outlines and discusses key findings from the case studies. Section 6 provides concluding lessons and future research on the empirical basis for linking climate change and sustainability at the community scale.

2. Integrating adaptation, mitigation, and sustainability

It has been common in the climate change literature to emphasize the differences between adaptation and mitigation (Klein et al., 2007), a distinction embedded in the very structure of the Intergovernmental Panel on Climate Change (IPCC). This dichotomy initially arose out of the perception that mitigation would be implemented rapidly enough to address the climate change problem, while adaptation proponents were 'defeatist' or 'fatalistic' (Biesbroek et al., 2009). More recent factors that have maintained the difference range from the framing of climate change as an environmental rather than human issue, leading to different ways of producing knowledge about mitigation and adaptation (largely economic and technologically-oriented in the case of mitigation, compared with the more ecologically- and socially-oriented expertise brought to bear on adaptation), as well as spatial, temporal, and stakeholder differences between the two (Biesbroek et al., 2009). The beneficial effects of mitigation, for instance, are often depicted as being external to the region implementing the strategies (Wilbanks et al., 2007) – however this is only the case if the co-benefits associated with mitigation remain unexplored, and the social, political, and economic interconnections between regions and nations are ignored. These perceived differences have become enshrined in complex institutional architectures, trickling down even to the local level, and

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