



LCR CONCEPTUAL PROCESS MODEL

The low carbon resilience (LCR) Conceptual Process Model illustrates how climate change adaptation and mitigation planning processes might be aligned, and suggests ways that key steps such as identifying co-benefits and cross evaluating emissions and vulnerability effects might be built into climate action project management.

Background

Climate change is causing environmental, social, health, and economic problems for Canadians that are projected to intensify over the coming decades. Adaptation to climate impacts is essential because global temperatures have already risen and will continue to increase to some extent, even if we were to eliminate all GHG emissions today.¹ The success of global emissions reduction efforts (mitigation) will determine the severity of future climate impacts, which will continue to escalate if we do not reduce global emissions by around 80%, the goal of Canada’s Mid-Century Strategy.² Low carbon resilience (LCR) is a lens designed to achieve strategic systemic integration of climate change adaptation and mitigation, which have largely been planned separately to date. Continuing to do so is inefficient in terms of resource expenditure and risks building in vulnerabilities, adding to emissions and missing transformative co-benefits. Integrating the two at all levels of policy, planning and practice via LCR approaches³ will help align climate action goals and advance the transition toward a more energy efficient, resilient, and sustainable future.

This model is intended to provide a starting point for discussion and can be modified to suit numerous contexts. The process is presented as sequential planning steps, as are two commonly used Canadian climate action resources: ICLEI Canada’s Building Adaptive and Resilient Communities (BARC) Program and the ICLEI-FCM Partners for Climate Protection (PCP) Program. However, many practitioners will be building from existing plans or strategies and incorporating LCR in an iterative fashion. Climate planning is subject to ongoing continuous improvement, and benefits can be gained by beginning to integrate these steps at any stage. For instance, most municipalities have mitigation plans, but many are just starting on adaptation plans, and the LCR processes presented in this section can be applied when renewing mitigation plans. Practitioners

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considering this approach are encouraged to test, modify and adapt the process according to their needs and context.

Key Concepts and Terms

Stakeholder and community engagement should be considered throughout the process.

Baseline conditions are past weather-related events that affected or could have affected the proposed project. Thinking about the direct and indirect impacts of the current climate is a useful starting point for evaluating the projected impacts of climate change.

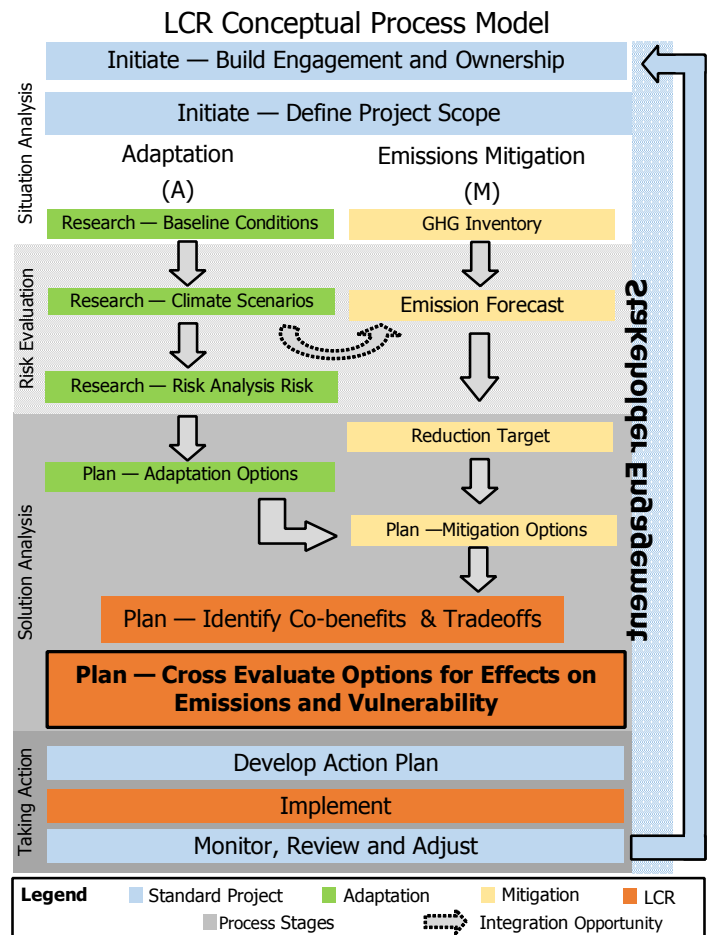
Assessing vulnerabilities and risks involves estimating sensitivity and exposure to projected climate impacts, assessing the resulting risks through analysis of the probability and magnitude of consequences, and determining the capacity to address them.

Co-benefits are the additional advantages of integrating adaptation and mitigation processes. These could include examples such as health benefits, support for biodiversity in ecosystem-based solutions, or time and money saved by combining mitigation and adaptation strategies.

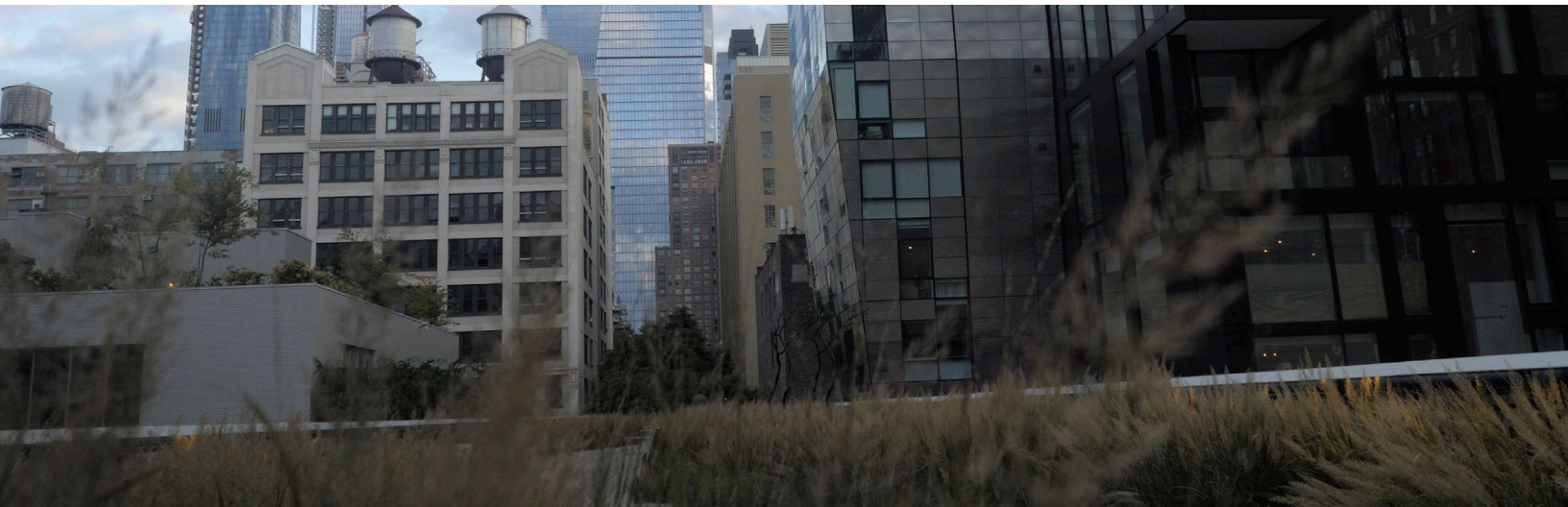
Cross-evaluating options for effects on emissions and climate vulnerability reductions minimizes conflict between adaptation and mitigation strategies. The LCR lens is designed to flag adaptation strategies that are highly emissions-intensive (e.g., concrete sea walls) and mitigation approaches that are exposed to climate impacts (e.g., energy-efficient buildings in a flood plain).

Implementation includes not only on-the-ground development of solutions but also operationalization via decision-making processes and incorporation into existing plans, budgets and policies.

Evaluations and adjustments are necessary to ensure the LCR process continues to accomplish its objectives as conditions and knowledge evolve.



LCR Conceptual Process Model





Milestone-based Planning Process

LCR DIAGRAM AND FURTHER CONSIDERATIONS

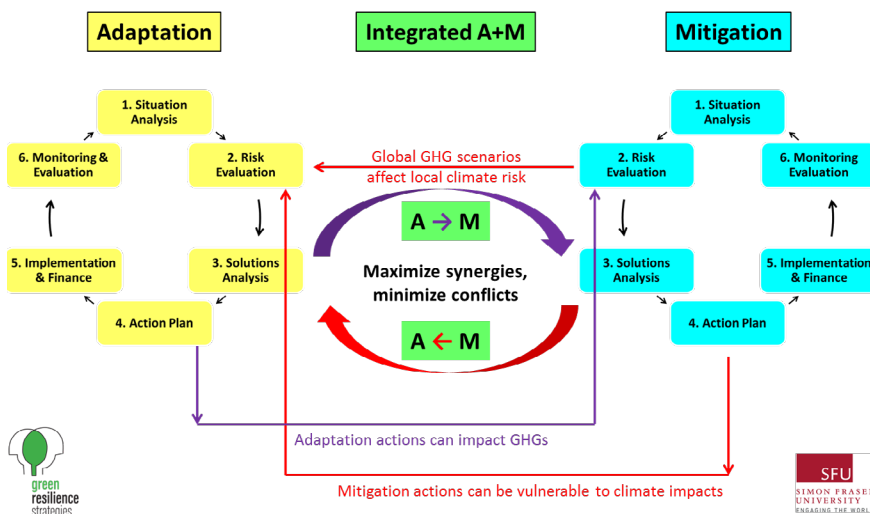
The following diagram presents another approach to a high-level overview of the process of integrating climate change adaptation and mitigation. It demonstrates how parallel efforts can be used to plan mitigation and adaptation strategies, identifies how these processes might interact with each other, and is intended to encourage decision-makers to think through how integrated action can be mainstreamed into existing planning processes. The six-step structure reflects stages in the two streams of climate action (starting with a pre-step of articulating the vision and defining the scope, boundaries, and timeframe). However, it is important

to note that as this thinking evolves, integrated climate action should become embedded throughout all planning processes, rather than being pursued as independent adaptation and mitigation streams.

Adaptation and Mitigation Interactions

An essential part of LCR solution analysis is to identify potential interactions between and among adaptation and mitigation measures, including co-benefits and synergies as well as trade-offs and conflicts. Such an assessment can start with common-sense consideration of potential interactions (“Asking the Climate Question”), including seeking input from experts involved with action design and implementation and stakeholders impacted by the climate action. Existing analytic tools (e.g., flood mapping and GHG emissions models) can be applied to determine the GHG and vulnerability/resilience impacts of various climate actions. ICLEI’s Building Adaptive and Resilient Communities (BARC) Framework includes prioritization of adaptation measures that have GHG reduction potential, or offer other mitigation co-benefits. Professionals would benefit from checklists and comprehensive inventories of potential adaptation

Connecting Adaptation and Mitigation Milestone-based Processes



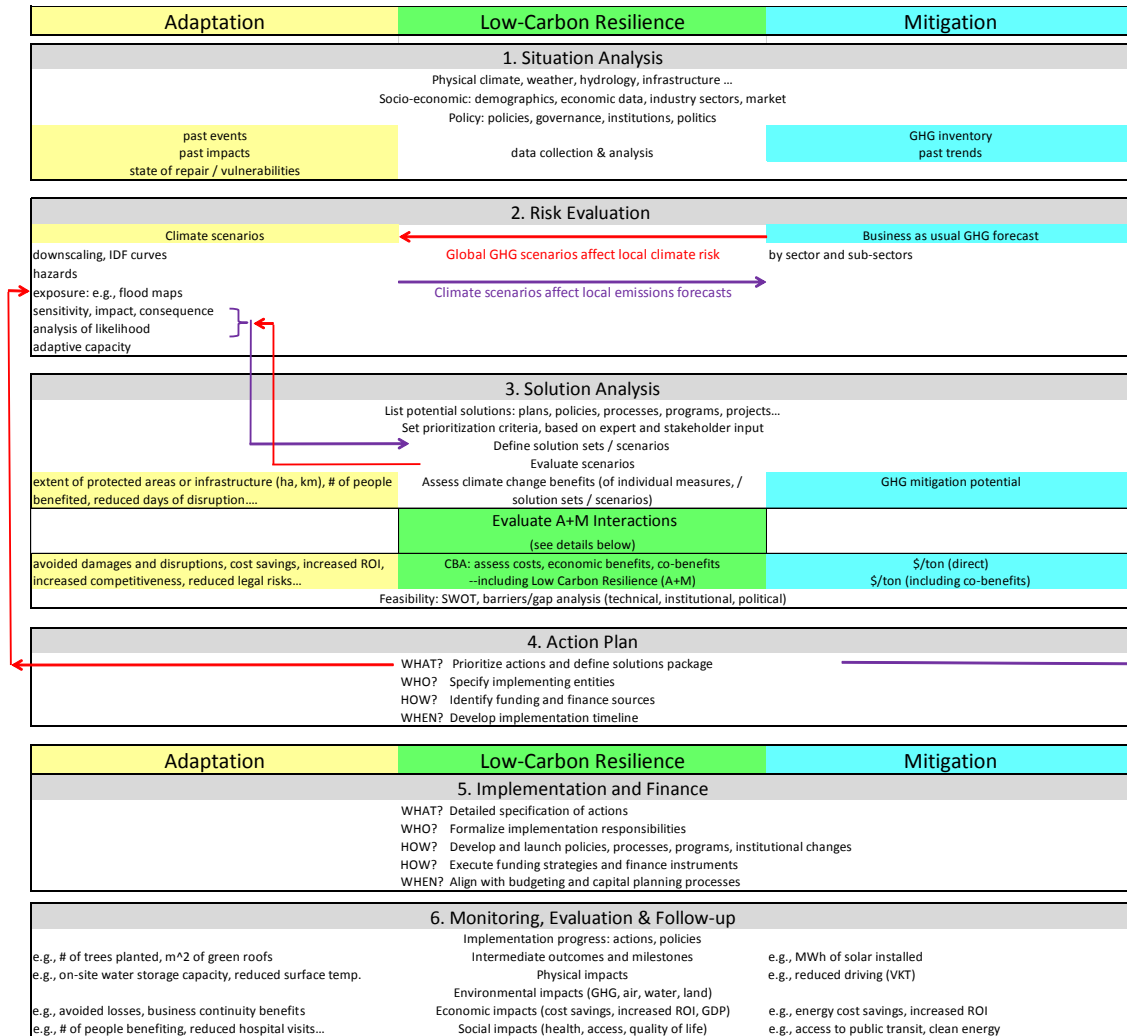
and mitigation interactions, as well as potential solutions to maximizing GHG and resilience benefits.⁴ There is also a need for quantitative tools to analyze potential conflicts and synergies among adaptation and mitigation actions.⁵

While actions specifically targeted to mitigation or adaptation can provide significant benefits, other broader activities, such as infrastructure spending and land use planning, can have much greater impacts – either negative or positive – due to their larger scale or broader scope. Therefore, it is important to “Ask the Climate Question” of broader processes, plans

and financial decisions that may have implications for adaptation and mitigation. This should include review of physical plans (land use, infrastructure, energy, transportation, water systems, flood management ecosystem protection, etc.), as well as financial plans (annual budgets, capital, operations and management, etc.) and asset management strategies.

Matrix: Integrating Climate Change Adaptation and Mitigation Planning and Action Process Steps

This annotated matrix provides examples of diverse process steps for integrated climate change adaptation and mitigation planning and action, and how they might be connected in an LCR approach, in more detail.



END NOTES

1 IPCC. (2014). Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

2 Environment and Climate Change Canada. (2016). Canada's Mid-Century Long-Term Low-Greenhouse Gas Development Strategy.

3 Nichol, E. and Harford, D. (2016). Transformative Climate Change Planning for Canada. ACT, SFU: Vancouver, BC.

4 The C40 Adaptation and Mitigation Interaction Assessment Tool (AMIA) provides initial qualitative assessment of A-M interactions.

5 Green Resilience Strategies has developed a concept for such a tool – the A+M Toolkit.