

Regional Adaptation Priority Theme Summary: Low Carbon Resilience and Asset Management



The Rural Climate Adaptation Capacity Building Project, led by the Columbia Basin Rural Development Institute, at Selkirk College, works in partnership with nine local governments in the Columbia Basin-Boundary region to advance climate adaptation through regional-scale action and collaborative learning. This series of knowledge briefs summarizes key themes addressed in activities and training undertaken by the project's regional network of local government-based adaptation practitioners.

Local governments own 60% of the infrastructure in Canada. This makes them vulnerable to the impacts of climate change, but also gives them an important role in implementing solutions. One-third of Canadian local government infrastructure is considered to be in fair, poor or very poor condition. This provides opportunities to upgrade and invest in climate resilient assets. Research shows that for every \$1 spent now making infrastructure resilient to climate change, it will save \$6 in future damages.¹

Low Carbon Approach

The Low Carbon Resilience (LCR) approach, championed by the Action on Climate Change Team (ACT) at Simon Fraser University, helps support local governments by coordinating and mainstreaming the need to adapt infrastructure to the threats of climate change (floods, drought, wildfire) while also reducing greenhouse gas emissions.² Using the LCR approach, other community priorities are addressed as co-benefits, such as improved health and well-being, improved recreational green spaces, and reduced risk to property value. This systemic climate action opens up opportunities for increased collaboration across local government departments, providing more cost-effective actions and more funding opportunities.³

LCR in Natural Asset Management

Managing natural assets is a crucial LCR strategy to reduce vulnerability to the impacts of climate change and reduce greenhouse gas emissions. Natural assets are ecosystem features that provide important local government services that are otherwise provided through engineered infrastructure. For example, forests, streams, and wetlands are natural assets that manage storm water runoff as compared to systems of pipes and drains that are engineered to do the same. These natural assets also help absorb greenhouse gases, reducing the local government's contribution to climate change.⁴

Accounting for natural assets is a crucial evolution in local government asset management. Natural assets have traditionally been invisible services with no assigned monetary value. This has caused some important natural assets to be lost to development. Local governments can use the LCR approach to start documenting, measuring and valuing the natural assets that service their community.⁴

While natural asset management is a cost-effective approach to service provision, valuing natural assets can be challenging. Natural assets often cross multiple jurisdictions and are more difficult to measure than engineered assets. However, natural asset valuation techniques are available to help decision-makers. These include considering how much the local government would have to pay to replace those ecosystem services with engineered assets, or the community's 'willingness to pay' for the services the natural assets provide.⁴

LCR and Natural Asset Management Case Study: Village of Silverton

The Village of Silverton is using the LCR approach to bring natural assets into their asset management planning, as they recognize that natural assets are integral to all of the services they provide. Silverton is a small village that faces unique challenges in implementing natural asset management strategies. It has few local government staff with limited available budget and in-house resources. To combat these limitations, Silverton has many partnerships, including other local governments, research institutions, and consultants. These partnerships help improve cost efficiencies and build capacity, allowing for increased collaboration managing the natural assets that are outside or are influenced by activities outside of their jurisdiction.⁵

Examples of natural assets in the Village of Silverton include the aquifer that provides drinking water to residents and riparian trees that manage storm water runoff. As they considered these assets, they started asking questions: How do they manage trees along the dike and gradually replace the trees vulnerable to the increasing number of wind events? How is the aquifer impacted by activities upstream in the watershed and how much would it cost to provide clean drinking water if the aquifer could no longer provide that service?

To help support the Village of Silverton to integrate LCR into their asset management, ACT and LandInfo Technologies⁶ (a consulting firm that provides asset management services to small communities using geographical information systems) worked together to pilot the addition of natural assets to the traditional engineered asset management process. Using open-sourced software to make the process accessible to small communities with limited budgets, they used a three-step process to treat natural assets the same as engineered assets:

Step 1 Asset Register: the collection and organization of assets, including natural assets, into a digital database that can be updated as necessary.

Step 2 Asset Prioritization: the assessment of what to do first, the probability of risk and the consequence of failure, and the determination of critical assets. This step considers how climate change trends and projections impact the assets.

Step 3 Capital and Operational Strategies: the assessment of how assets will be fixed, how much it will cost, and how it can be funded.

Further Reading

¹ Federation of Canadian Municipalities and Insurance Bureau of Canada: [Investing in Canada's Future: The Cost of Climate Adaptation at the Local Level](#). 2020

² Action on Climate Change Team at Simon Fraser University: [A Low Carbon Resilience Decision Tool for Local Government](#). 2021

³ Action on Climate Change Team at Simon Fraser University: [LCR: Advancing the Co-Benefits of Climate Action](#). 2021

⁴ Action on Climate Change Team at Simon Fraser University: [Accounting for Natural Assets in Local Governments: A Low Carbon Resilience Approach](#). 2020

⁵ Action on Climate Change Team at Simon Fraser University: [LCR Communication and Implementation: Lessons from ICABCCI Partner Communities](#). 2020

⁶ LandInfo Technologies Inc. [Services](#). 2021