



Local Governments
for Sustainability
Les gouvernements locaux
pour le développement durable
CANADA

Low-carbon Resilience and Nature-based Solutions

Slide decks presented by ACT —
Action on Climate Team at
Simon Fraser University.





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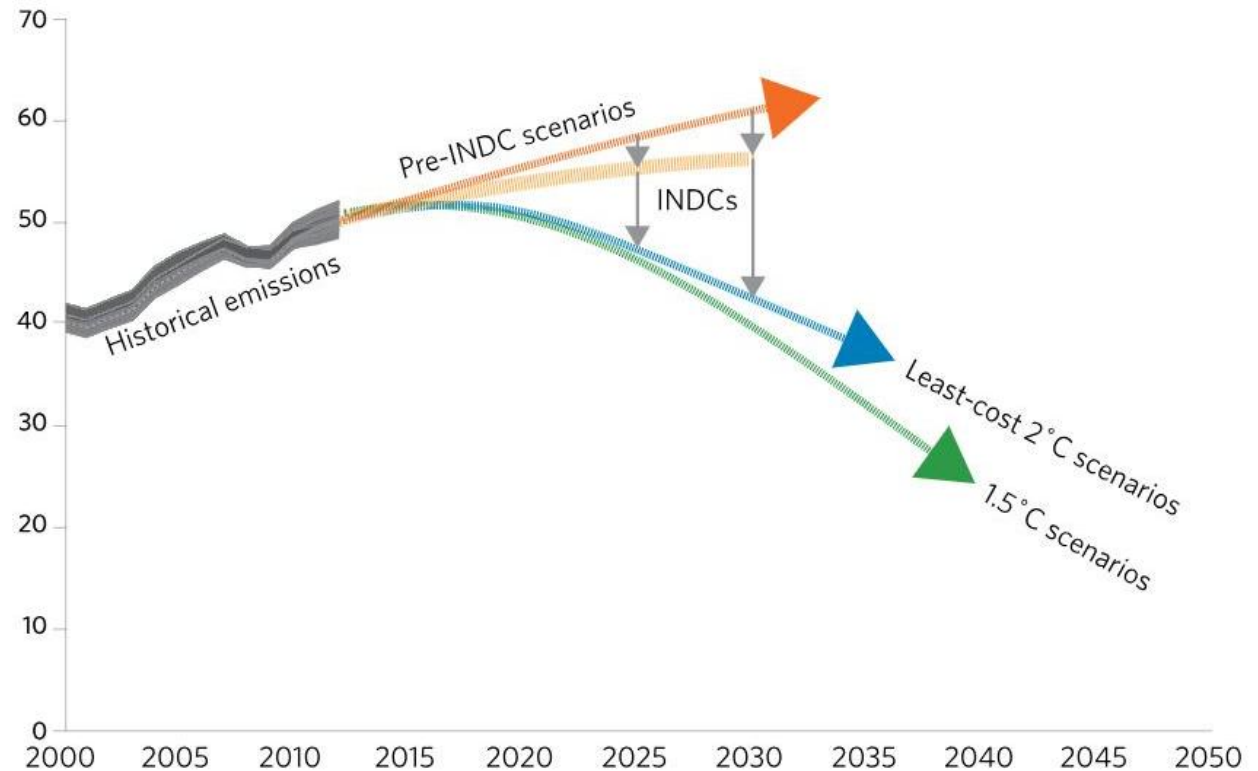
Low Carbon Resilience: Climate Action that Multi- Tasks

May 30, 2025



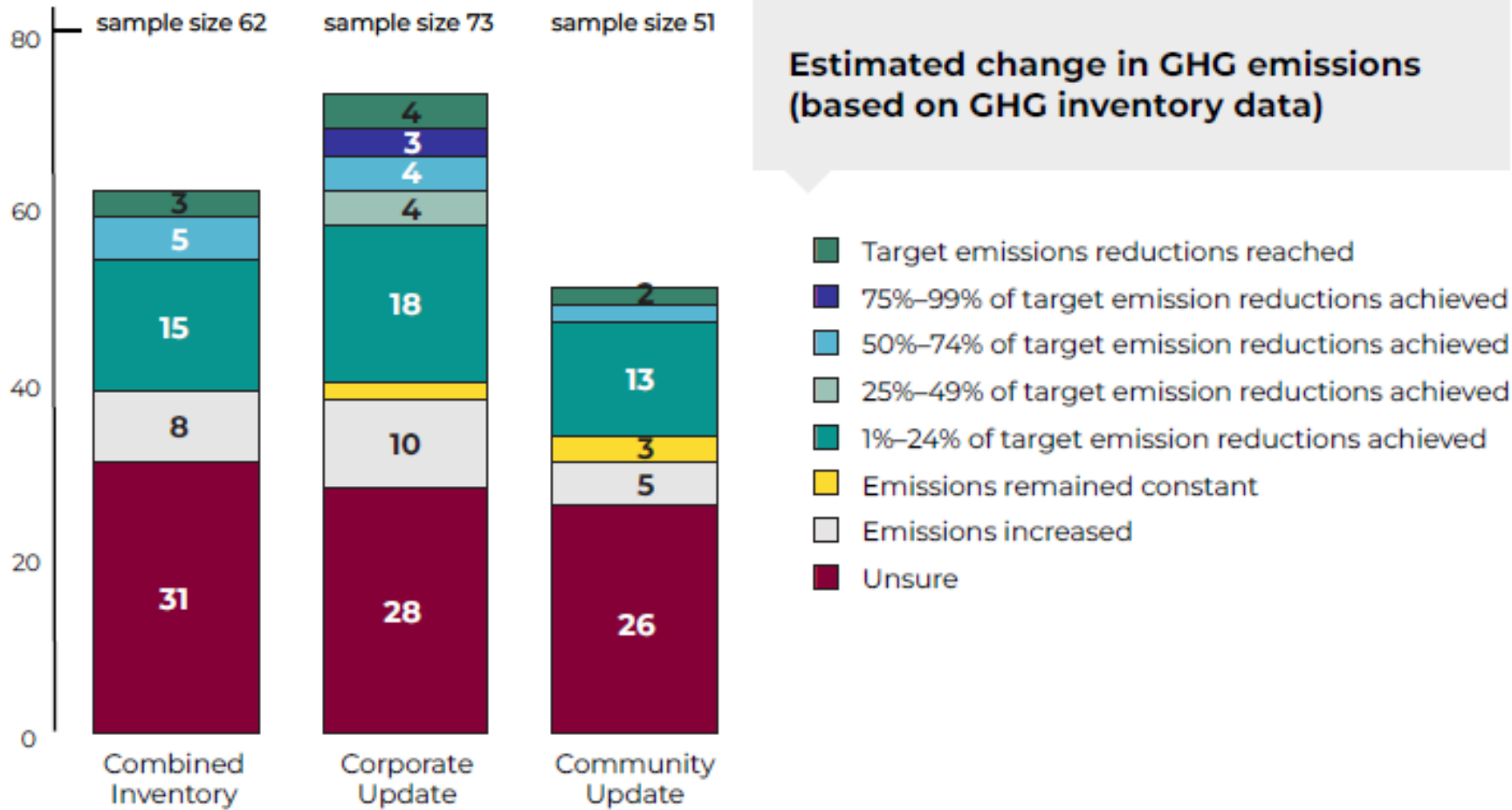
Climate action plans & targets are increasingly ambitious, but progress has remained incremental

Intended Nationally Determined Contributions (INDCs): are a key element of the United Nations Framework Convention on Climate Change (UNFCCC), which is an international treaty signed by nearly all countries in the world.



Comparison of global greenhouse gas emission levels in 2025 and 2030 resulting from the implementation of the intended nationally determined contributions (INDCs and under other scenarios (GtCO₂ eq/yr)

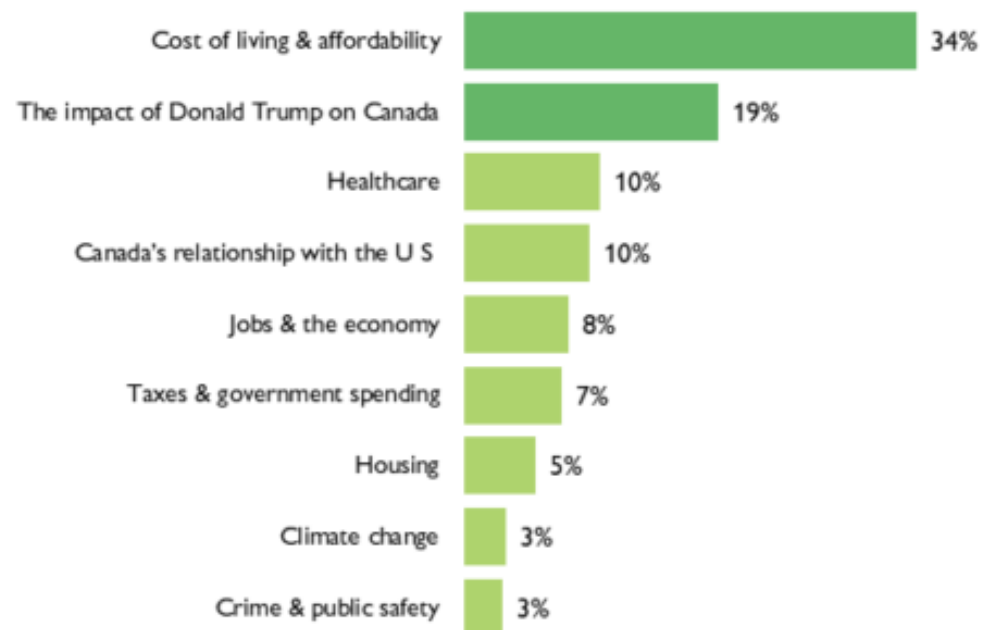
**Figure 10: Current state of progress towards GHG emissions reductions targets
(based on GHG inventory data)**





Which issue will have the biggest influence on your vote in the next election? (Select one)

ISSUE THAT WILL HAVE THE BIGGEST INFLUENCE ON VOTE



Base: All (n=2,000)



A SHIFTING MINDSET AMONG CANADIANS | ABACUS DATA





Community Resilience

A resilient and thriving community proactively assesses risks and minimizes vulnerabilities in populations, infrastructure, and ecosystems—preparing for and adapting to a rapidly changing climate, recovering from extreme weather events, and continuously evolving and strengthening socio-ecological systems.

Low Carbon Resilience (LCR)

A step change in climate action that coordinates and mainstreams adaptation, mitigation, and co-benefits in municipal decision processes.



LCR Lens

LCR is not an additional process!

It is an approach that builds climate action into existing projects and mandates. This helps:

- Reduce contradictory outcomes
- Multi-solve and identify new opportunities

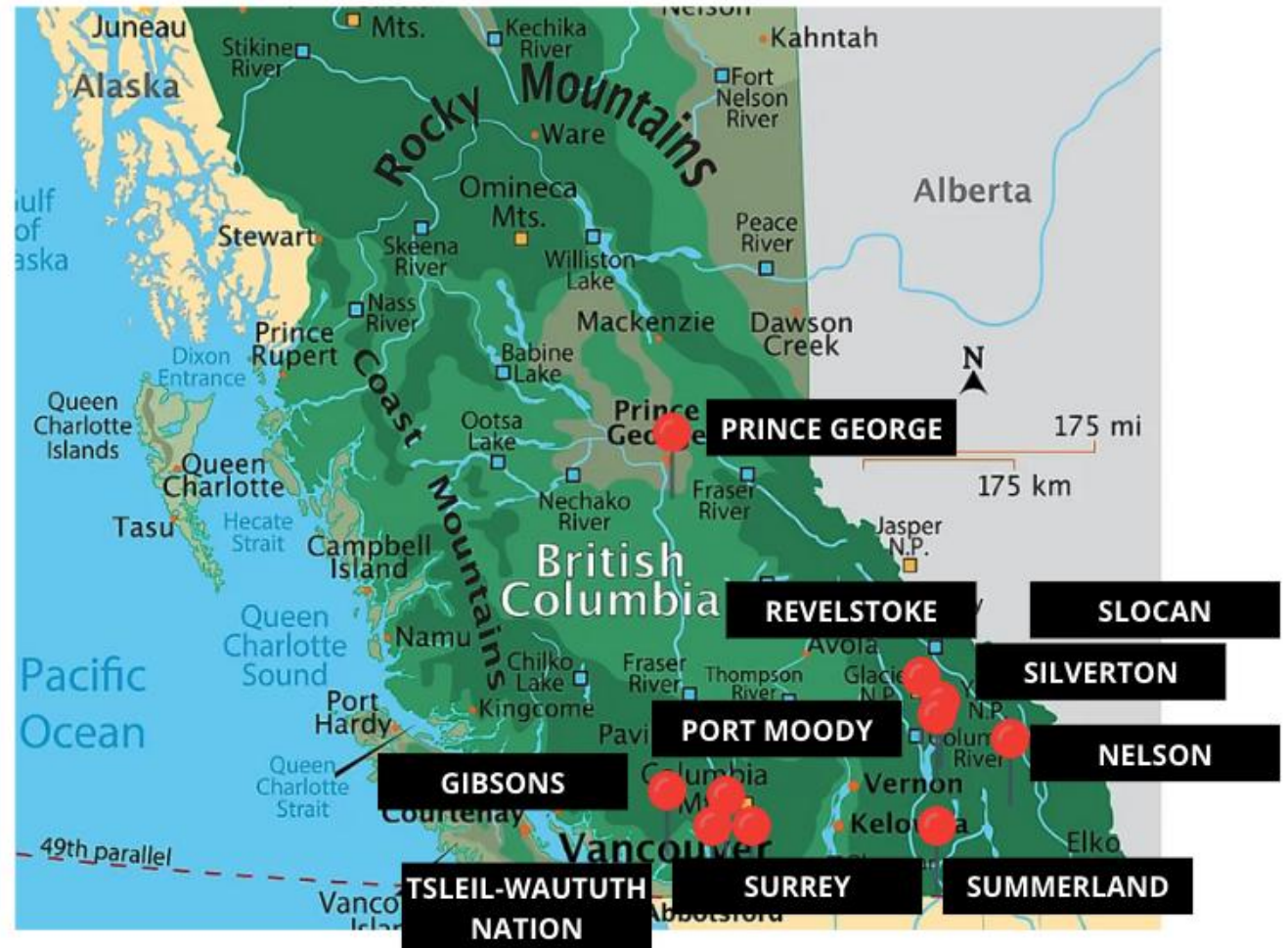


- 1 CLIMATE RISK:** Does the proposed investment, project or action minimize community vulnerability to projected climate impacts such as flooding, wildfire, heat, and other extreme events?
- 2 EMISSIONS:** Does it measurably reduce corporate and community emissions, and help advance zero emissions reduction goals?
- 3 CO-BENEFITS:** Does it advance community resilience and sustainability goals such as health, equity, biodiversity, economic savings, and clean development?

Testing and Co-developing the LCR Approach in Practice (2018-2021)

Integrated Climate Action for BC Communities Initiative

- Action-oriented research
- 10 partner communities
- Co-create and embed low carbon resilience into community planning, asset management, corporate strategy
- Practical, cost-effective LCR resources for local governments



DEPTH OF IMPLEMENTATION
Depth of penetration into decision processes

MAINSTREAM
LCR framing
throughout
municipal plans
and processes

STREAMLINE
adaptation and
mitigation
planning
processes into
one LCR planning
process

COORDINATE
LCR strategies
from existing
adaptation
and/or mitigation
plans

PATH 1

PATH 2

PATH 3

CROSS-REFERENCE
and assess plans to
identify LCR
linkages

CO-EVALUATE
risk and vulnerability
and emissions data
for priority LCR
strategies

EMBED climate
projections and
LCR criteria into
all decisions

LEVEL OF INTEGRATION

Extent of co-evaluation of vulnerabilities, emissions, and co-benefits*

LCR : Designed for you

The LCR approach is designed to meet municipalities at any stage of the climate action planning to implementation process.

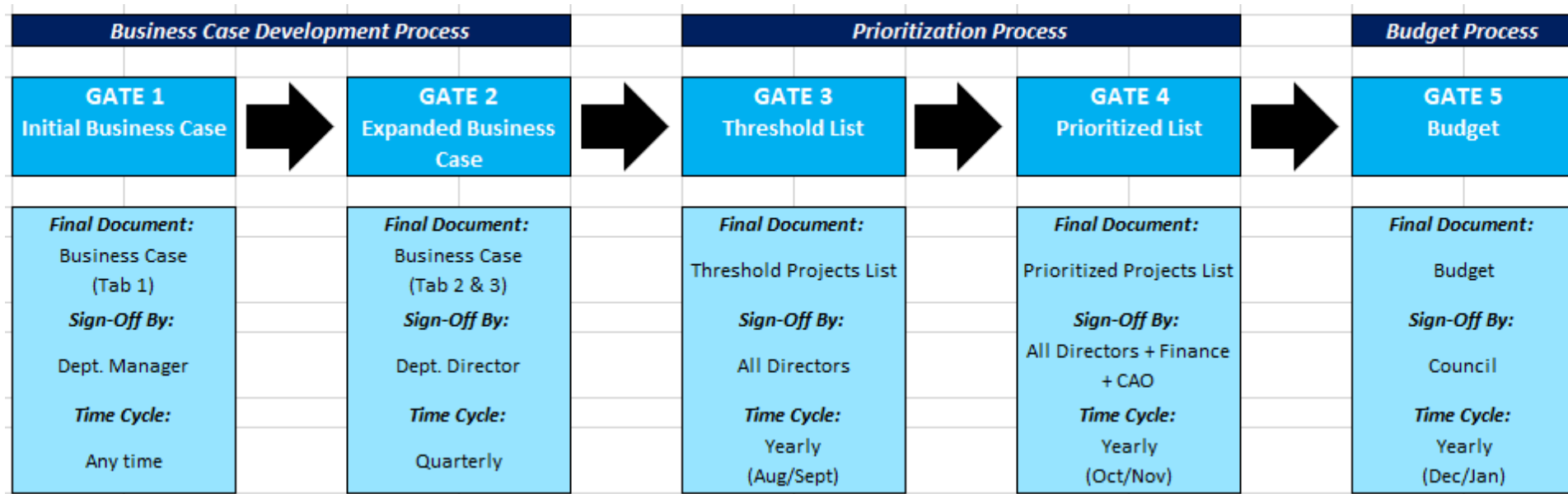
LCR in Climate Change Planning

- LCR differs through:
 - Upfront development of a cross-departmental/sectoral Climate Action Team (CAT)
 - Embedding climate into decision-making, procurement, and financing decisions
 - Catalyzing changes to corporate structure and governance



Summerland: LCR in Asset Management

- In the District of Summerland all capital projects over \$10,000 now use LCR criteria to demonstrate how the project reduces risk and emissions, and the co-benefits it can offer.



Port Moody: LCR to Implementation

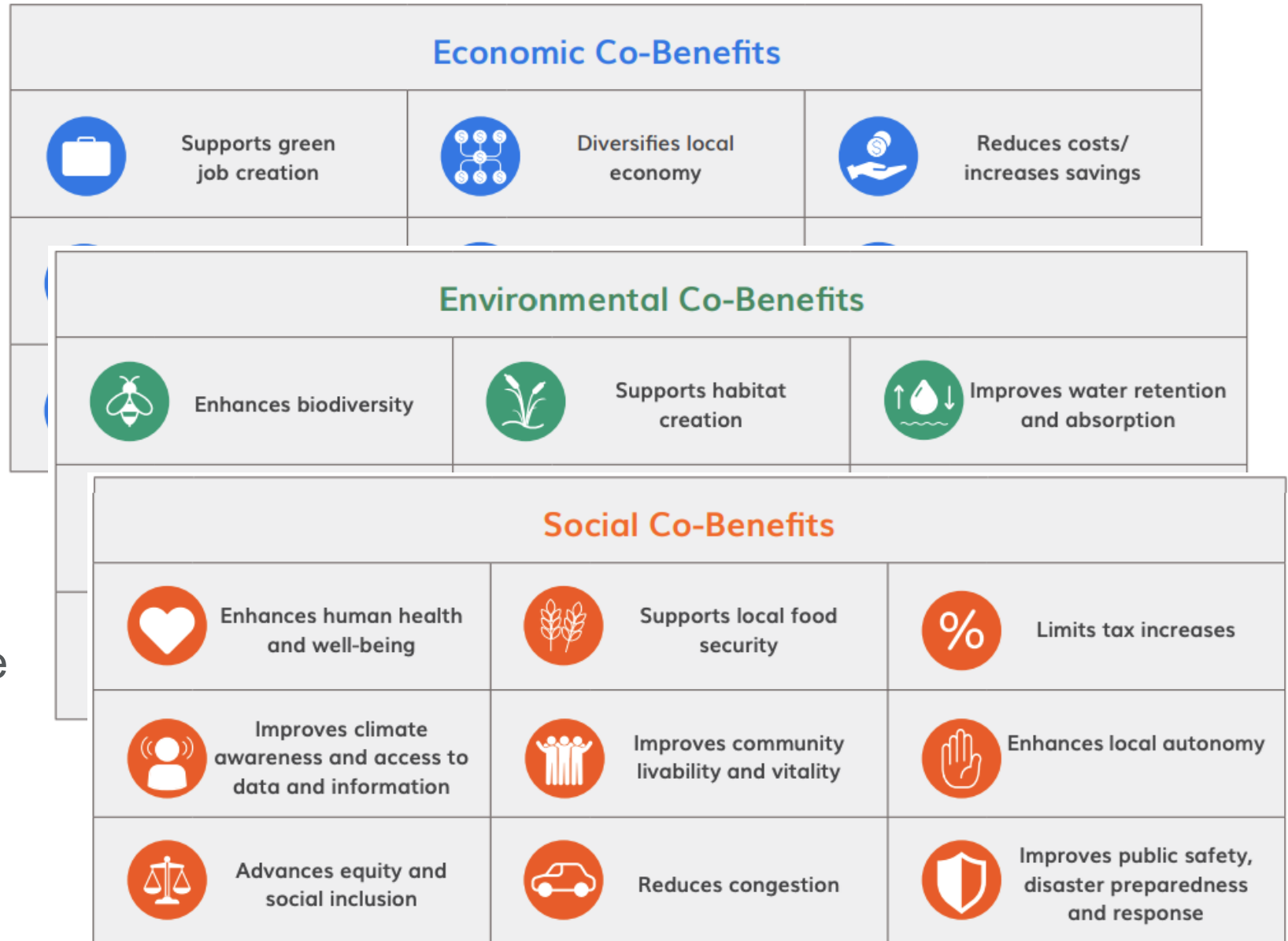
- Port Moody continues to make progress on embedding low carbon resilience in City processes such as integrating climate alignment into the budgeting process, adhering to sustainable purchasing principles, and implementing the sustainable events policy.

Goal(s) 6.1
Embed an LCR climate lens into City processes.

Plan Label And Number	Description	Start Date	End Date	Status	Progress	Tags
Actions 6.1.1	Integrate Climate Budgets (PHASE 1) Integrate climate budgets in the municipal budget process.	Apr 01, 2021	Dec 31, 2022	Completed	Progress 100%	Phase One Actions
Actions 6.1.2	Low Carbon Resilience Policy (PHASE 1) Develop policy and procedures to embed climate mitigation and adaptation considerations throughout day-to-day City business.	Jul 05, 2021	Nov 30, 2029	On Track	Progress 13%	Phase One Actions

Co-Benefits

- Promotes actions that multi-task
- Supports community climate resilience and sustainability goals
- Saves communities and taxpayers money over the long-term
- Extends climate action into all areas of work



Message Framing



Economic
Benefit
Framing



Public Health
Framing



Environment
and
Biodiversity
Framing



Social Norms
Framing

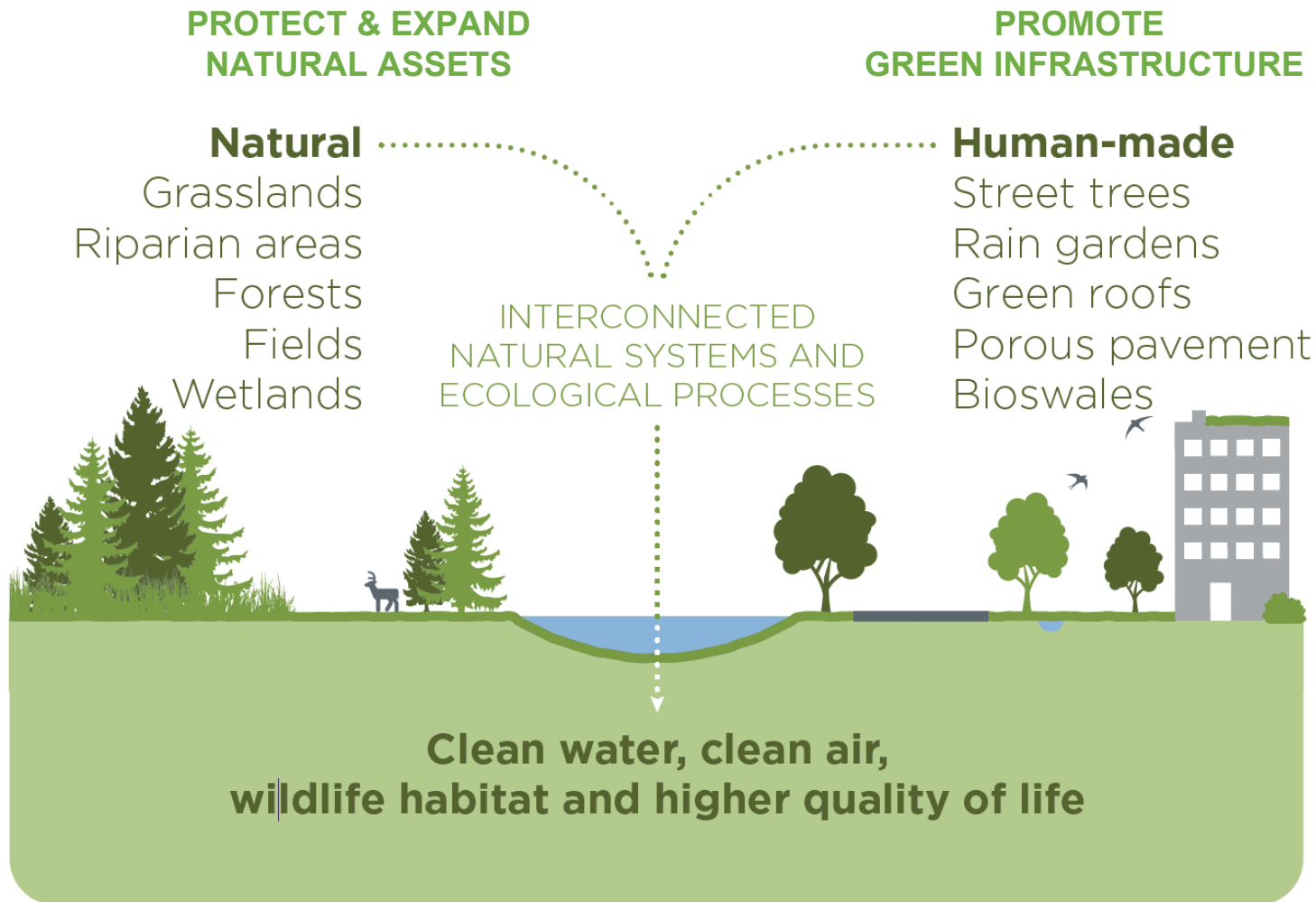


Extreme
Weather
Framing

Nature-based Solutions (NbS)

NbS are “actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits.” (UNEA, 2022)

Nature-based Solutions: An LCR Strategy



Key Benefits:

1. Avoid flood and urban heat risks
2. Sequester carbon
3. Avoid costs/emissions from expanded infrastructure and/or replacement
4. Promote healthy ecosystems, e.g. air, water, biodiversity
5. Advance co-benefits, e.g. equity, health, livability
6. Provide green, resilient infrastructure

Key Findings

- Growing Popularity of Nature-based Solutions
- Focused on Local Issues
- Need for Coordinated and Collaborative Approach
- Overlooked Biodiversity and Inclusive Governance
- Importance of Standardized Monitoring and Evaluation



The NbS Opportunity

NbS CHALLENGES	OPPORTUNITY
1. Disconnected NbS nomenclature and approaches	Build coherence across 3 nested approaches
2. Ad hoc and project-based	Promote cohesion across 4 scales of NbS action
3. Narrow and singular-focused applications	Advance multi-solving in all NbS, optimizing across 5 key objectives

1. Build Coherence: 3 Nested Approaches

Monitoring and enhancing ecological processes through
Ecosystem-based Management

Protecting and restoring
Natural Assets

Enhancing and engineering
Blue-Green Infrastructure

NATURAL ASSETS

- Forests
- Wetlands
- Shorelines
- Lakes, rivers, streams & creeks
- Marine environment

RESTORED ASSETS

- Reforestation & afforestation
- Rewilded cultivated lands
- Restored wetlands & streams
- Renaturalized shorelines
- Restored coral/oyster/clam reefs

HYBRID ASSETS

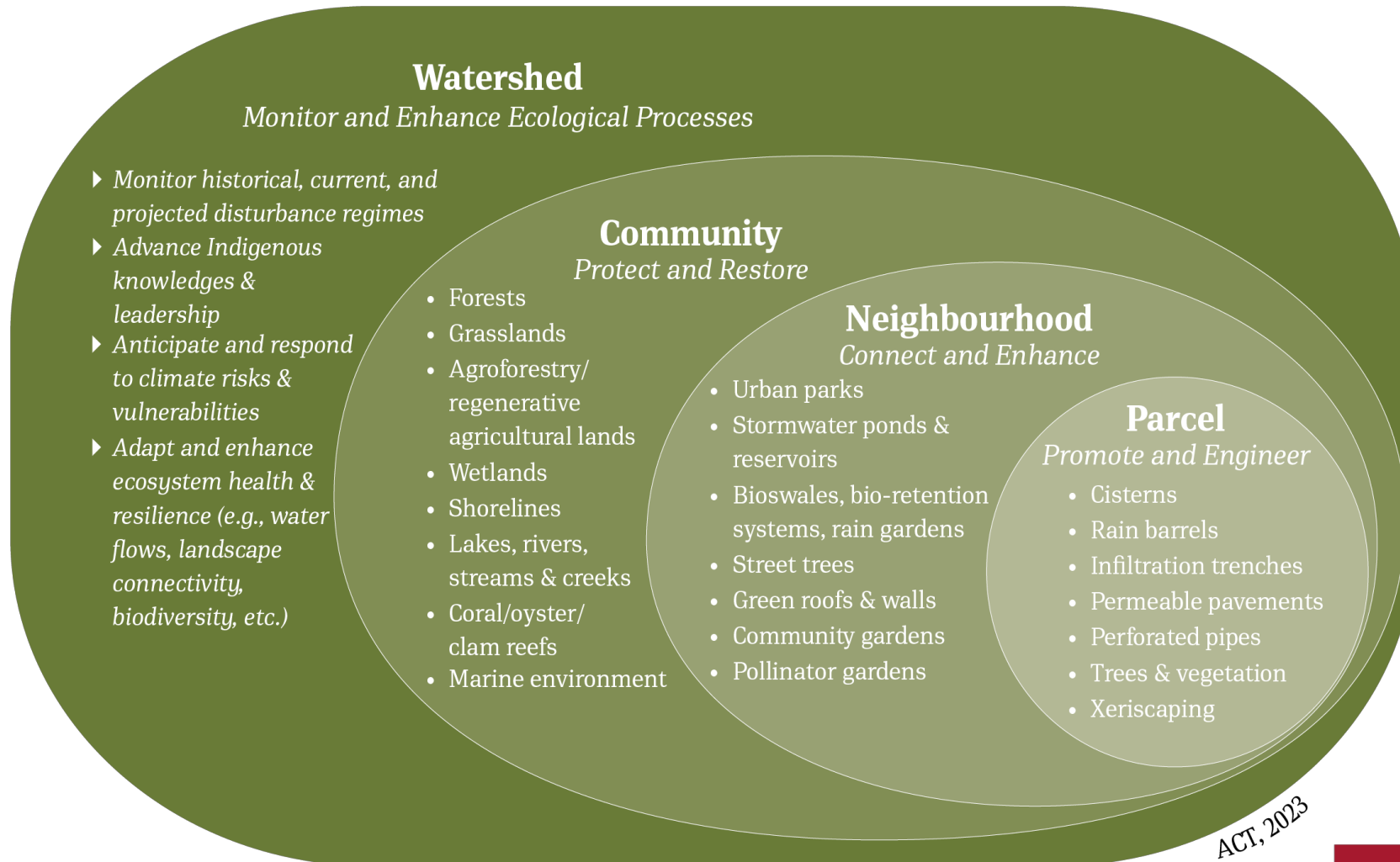
- Sustainably managed agriculture & aquaculture/ regenerative agriculture/ agroforestry
- Urban parks
- Stormwater ponds & reservoirs
- Bioswales, bio-retention systems & rain gardens
- Street trees
- Green roofs & walls
- Community gardens
- Pollinator gardens
- Xeriscaping

ENGINEERED ASSETS

- Cisterns
- Rain barrels
- Infiltration trenches
- Permeable pavements
- Perforated pipes
- Downspout disconnections

ACT, 2023

2. Promote Cohesion: 4 Scales of NbS Action



3. NbS that Multi-Solve: 5 Key Objectives

1. Centre Indigenous Knowledge & Leadership
2. Promote Biodiversity
3. Embed Climate Action
4. Enable Sustainable Service Delivery
5. Support Health, Equity & Justice

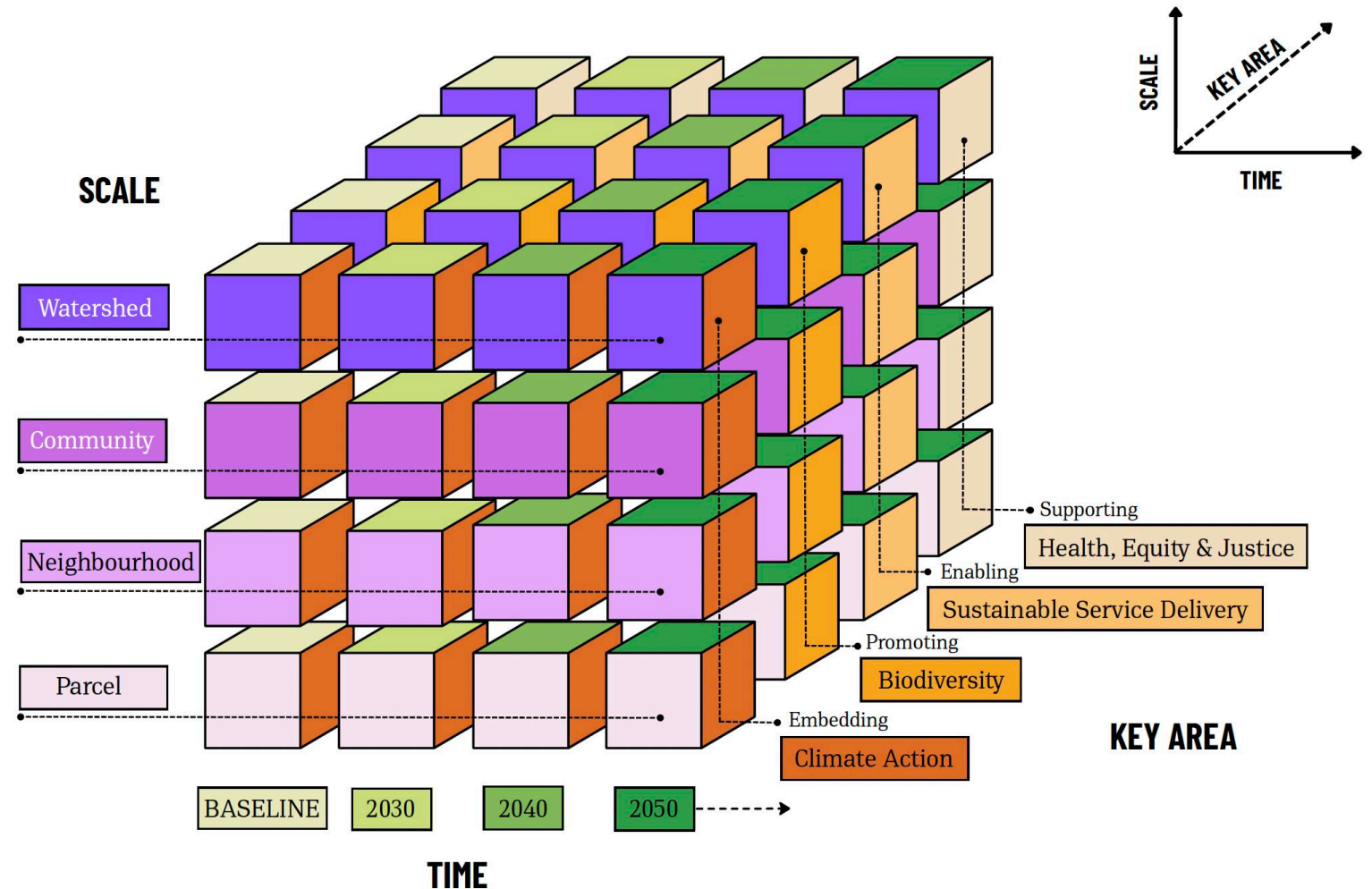


Photo Credit: Christopher McLeod

ACT's Natural Solutions Initiative

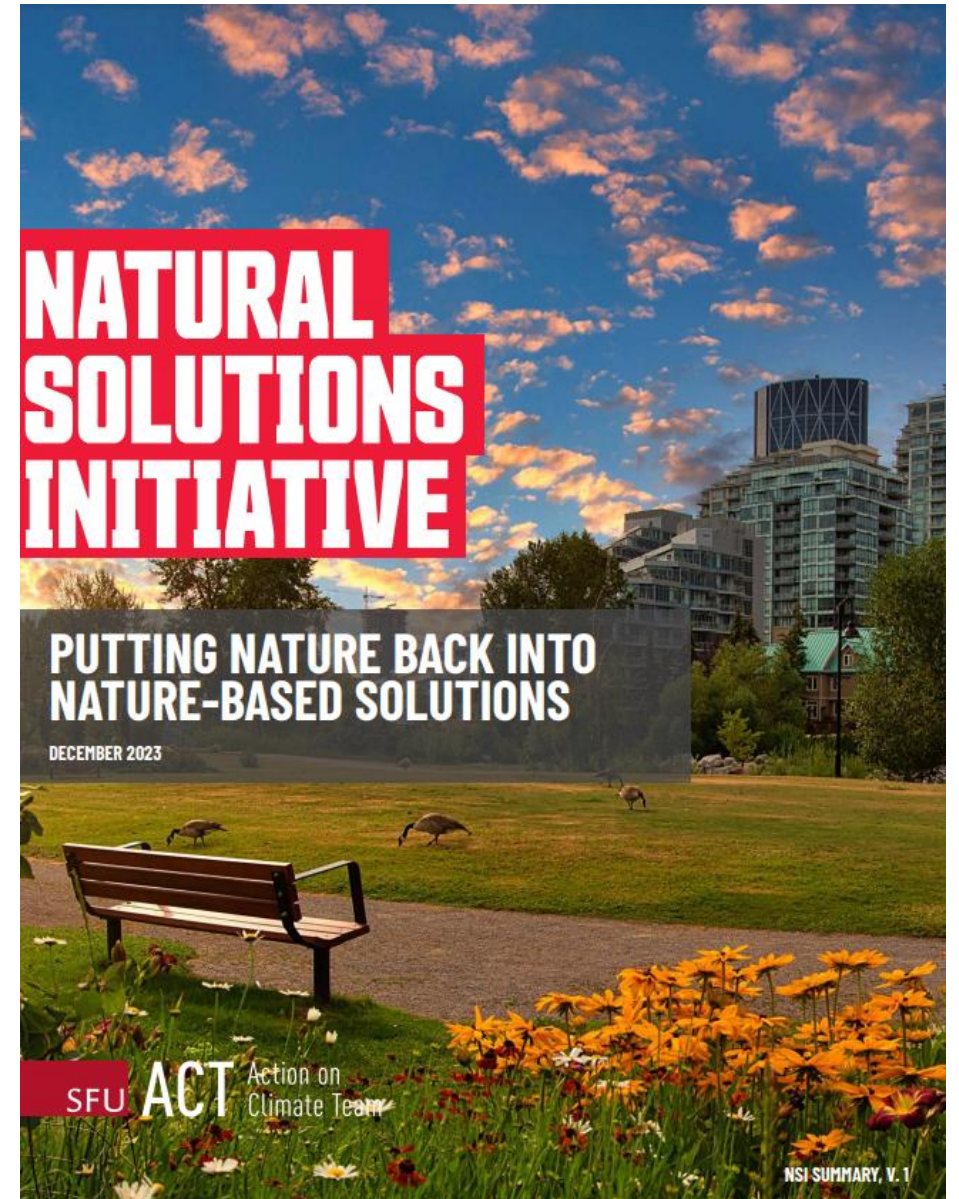
Mission: To co-create and advance a cohesive and systemic NbS framework-for-action that optimizes benefits for both people and nature under a rapidly changing climate.

Ethos: To centre Indigenous knowledges and leadership at the watershed-scale, and wherever possible.



ACT's Natural Solutions Initiative

The Natural Solutions Initiative aims to optimize and mobilize nature-based solutions as crucial opportunities in the transition toward just, low carbon resilient, and sustainable communities and regions.



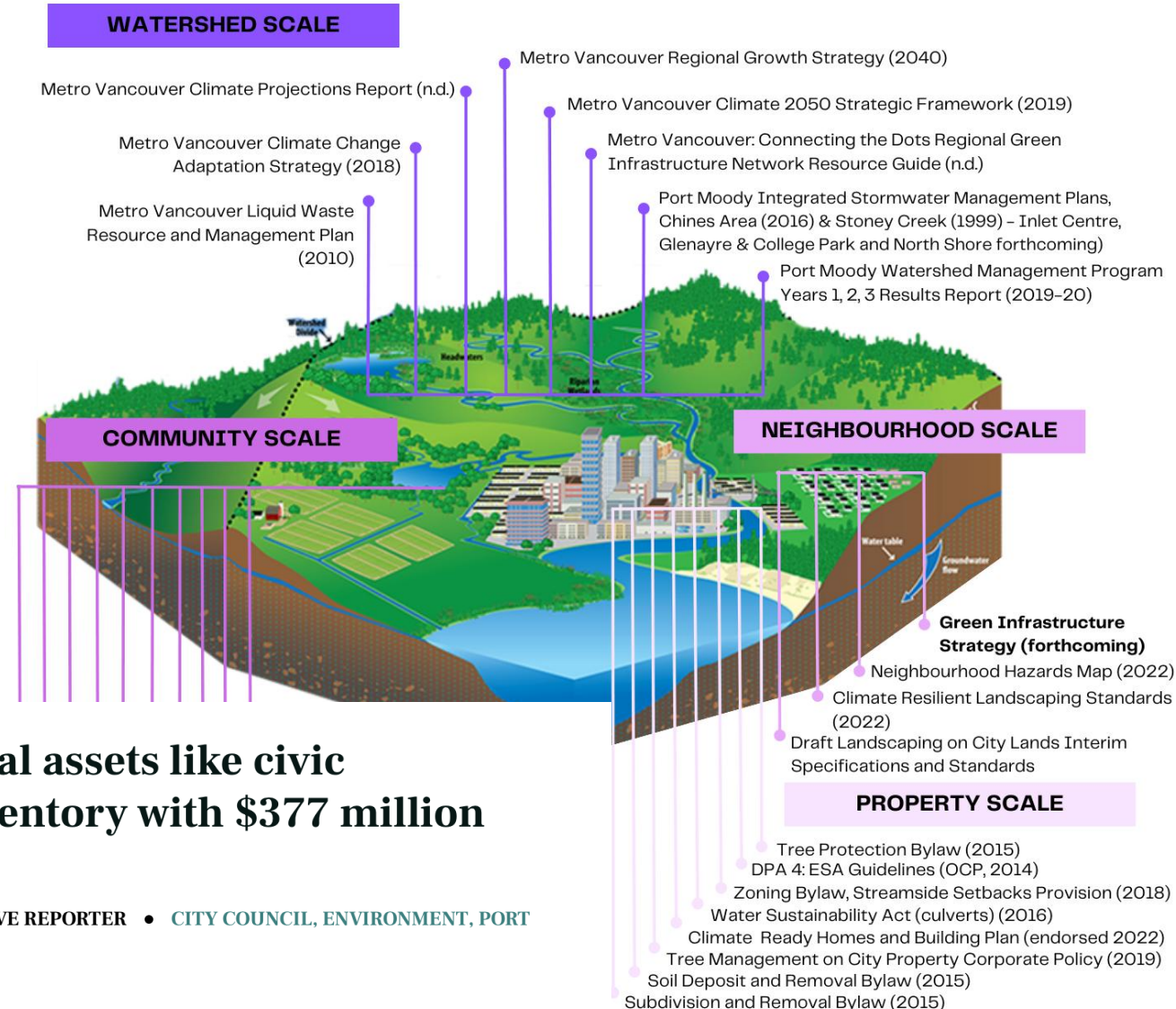
NSI to Date: City of Port Moody

Monitoring Watershed Health & Resilience: Ecosystem-based Management

Natural Assets: Planning & Management

Port Moody to treat natural assets like civic infrastructure; create inventory with \$377 million valuation

BY PATRICK PENNER, LOCAL JOURNALISM INITIATIVE REPORTER • CITY COUNCIL, ENVIRONMENT, PORT MOODY • MARCH 5, 2024

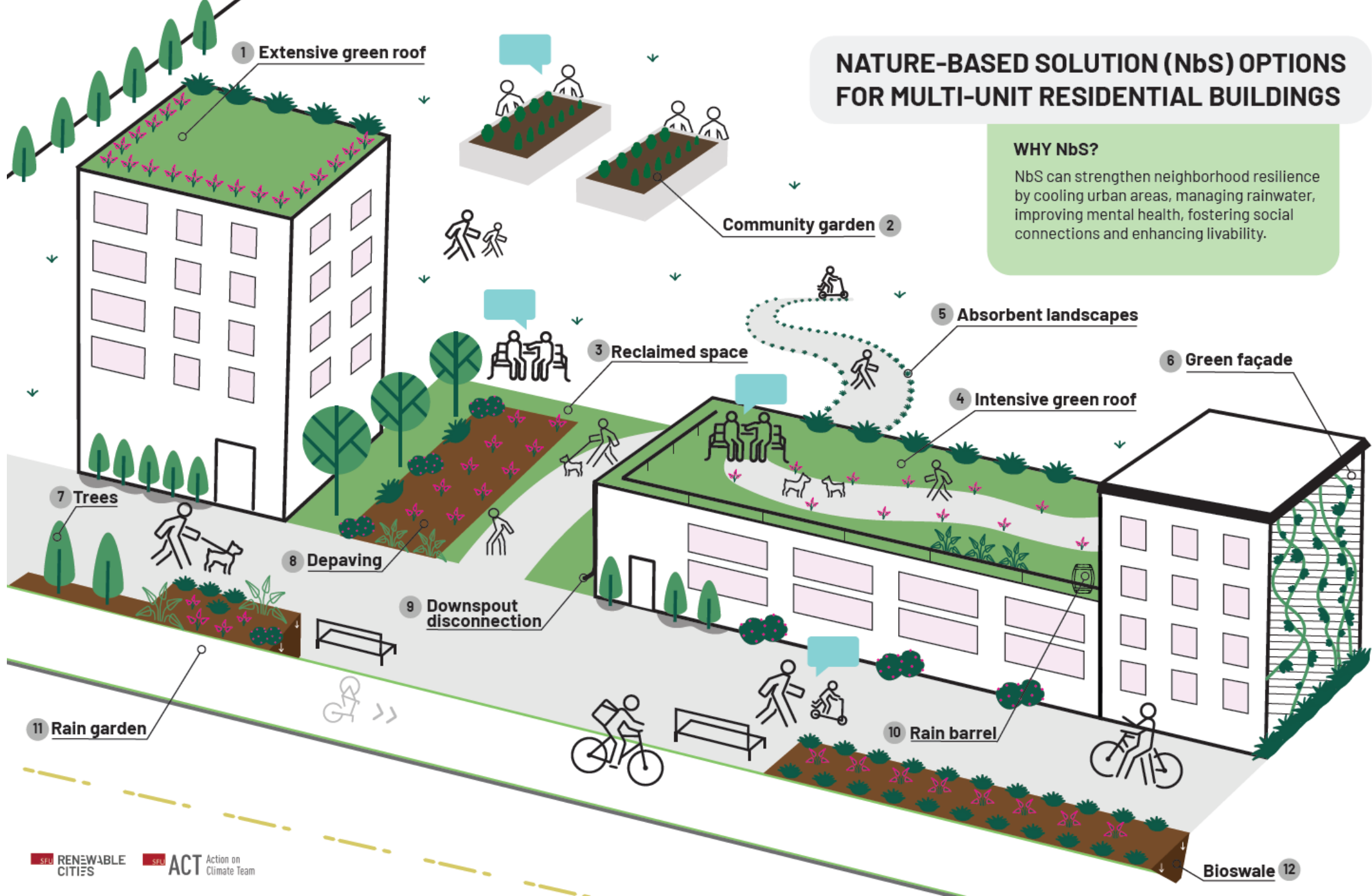


Blue-Green Infrastructure: Strategy & Bylaws

NATURE-BASED SOLUTION (NbS) OPTIONS FOR MULTI-UNIT RESIDENTIAL BUILDINGS

WHY NbS?

NbS can strengthen neighborhood resilience by cooling urban areas, managing rainwater, improving mental health, fostering social connections and enhancing livability.



WHAT NbS ARE AVAILABLE FOR MULTI-UNIT RESIDENTIAL BUILDING SITES IN B.C.?

Ideas for private properties, whether it's a new build or a retrofit:

SFU RENEWABLE CITIES

sfu.ca/renewable-cities

SFU ACT Action on Climate Team

sfu.ca/act

1 Extensive green roof

- Lightweight and covered with shallow soil that grows hardy plants like grasses and succulents
- Lower maintenance and mainly used for environmental benefits, not for people to access



Image: Zimco

2 Community garden

- Shared spaces for growing plants, vegetables, flowers
- Found on rooftops, courtyards or streets
- Planted directly in the ground or in planters, depending on space and conditions



Image: Nina Grossman, Google News Mirror

3 Reclaimed spaces*

- Areas where these surfaces have been replaced with green courtyards, walkways or micro-forests, turning unused or paved areas into useful, eco-friendly spaces for community gathering



Image: City of Vancouver

*Retrofit focused

4 Intensive green roof

- Built with deep soil to support a wide variety of plants, including small trees
- Requires more maintenance and structural support, but can create vibrant green spaces, like gardens, patios or small parks, for social gathering and relaxation



Image: City of Vancouver

5 Absorbent landscapes

- Designed to let water soak into the ground, helping to capture and store rainwater
- Simple and effective and includes typical gardens or other natural surfaces



Image: City of Vancouver

6 Green façade

- Use climbing plants that grow from the ground or planters, relying on a trellis or wire system to climb up the wall



Image: Bent Architecture

7 Trees

- Readily available NbS
- Can thrive in paved areas by using soil cells (underground structures that support pavement while providing loose, healthy soil for tree roots to grow)



Image: Servpro

8 Depaving*

- Process of removing hard surfaces like asphalt or concrete to allow water to soak into the ground



Image: Earthbound Report

9 Downspout connections

- Process of separating a downspout from the storm sewer system and directing it to a garden, rain barrel or absorbent landscape



Image: Langley Advance Times

10 Rain barrels

- Containers placed under downspouts to collect rainwater from rooftops
- Collected water can be used for irrigation or other non-potable purposes

11 Rain gardens

- Shallow, vegetated garden areas designed to capture and absorb rainwater
- Rocks and water-loving plants help filter and treat the water before it soaks into the ground



Image: Erin Seagren, Vancouver is Awesome

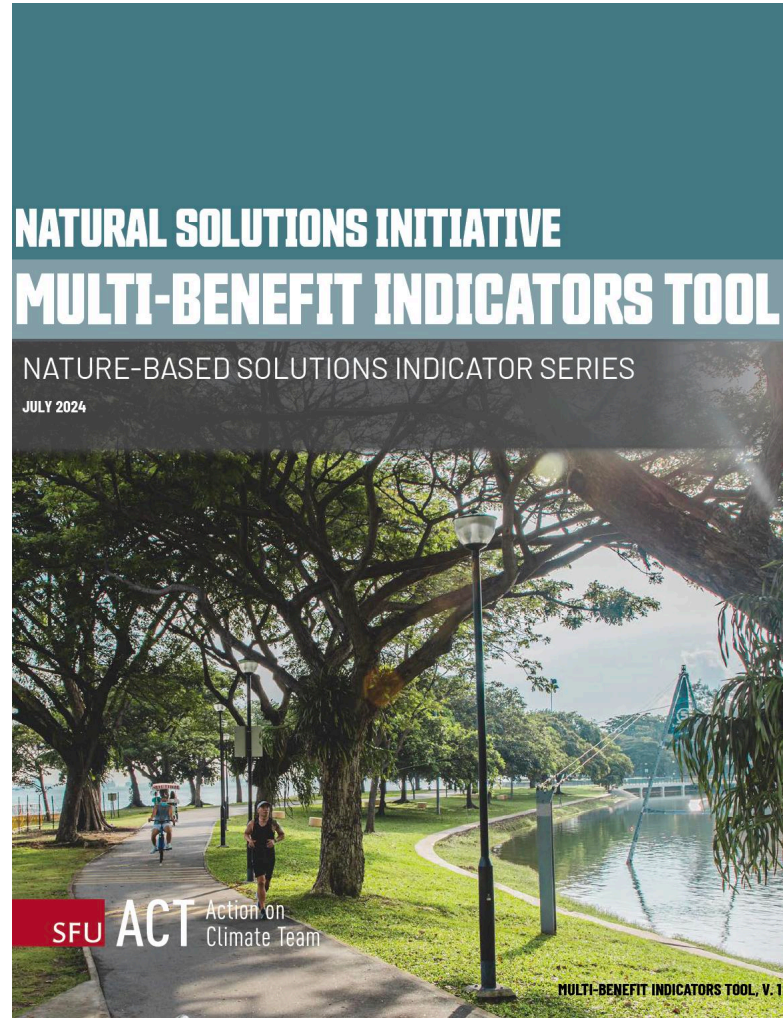
12 Bioswales

- Larger landscaped features that collect and filter rainwater
- Designed with plants and layered soils to improve treatment before the water soaks into the soil or flows to the sewer system



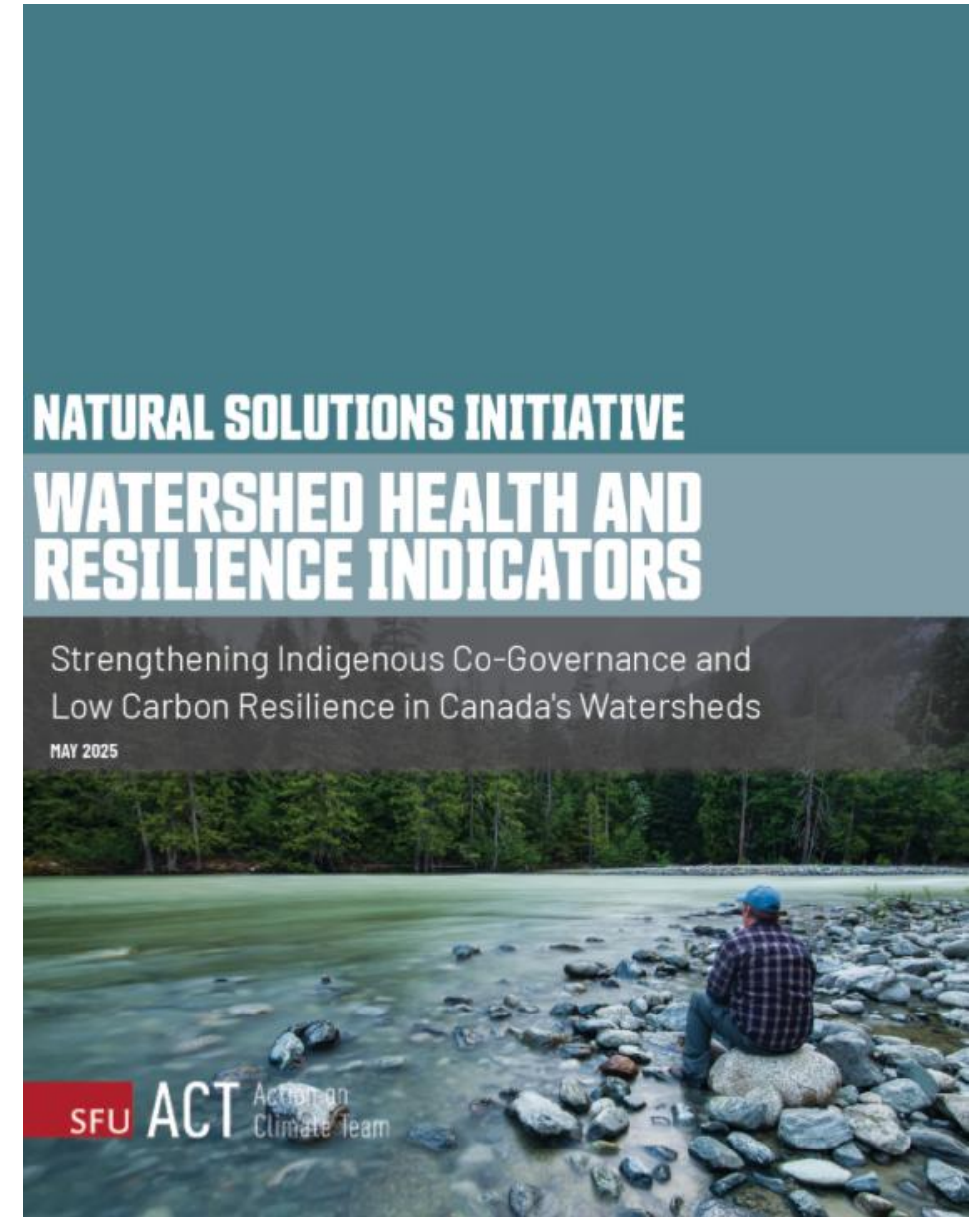
Image: City of Vancouver

NSI: Resources



Watershed Health and Resilience Indicators

This resource points to a strategic and timely opportunity to link place-based Indigenous Knowledge systems and practices with ecosystem-based monitoring and management at the watershed scale to advance Indigenous leadership, and ecosystem and community health and resilience.



NSI: Watershed Health and Resilience Indicators

Table 3: Sample Distribution of Watershed Health and Resilience Indicators






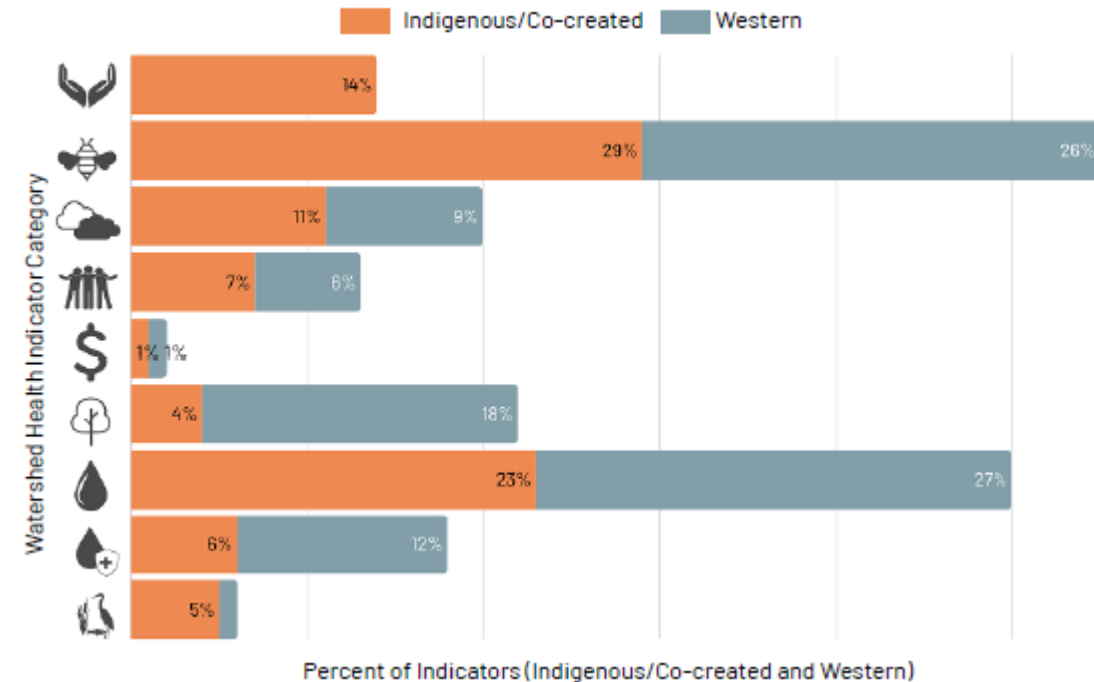
Watershed Health Indicator Category	Indigenous/Co-created WHIs	Unit or Scale of Measurement	Western WHIs	Unit or Scale of Measurement
Indigenous Knowledge Systems and Leadership 	What about the future?	<ul style="list-style-type: none"> Documenting traditional and evolving systems for knowledge transfer Developing policy and water related climate adaptation strategies 		
	Storytelling	<ul style="list-style-type: none"> Frequency of storytelling, e.g. we use storytelling more (in)frequently now to share our beliefs than in the past because of changes to the delta. 		
Biodiversity 	Texture (Fish)	<ul style="list-style-type: none"> Index Biological Integrity - Fish Health 	Fish Populations	Reduced length of open season, minimum size limits, fish stocking
	Smell (Fish)	<ul style="list-style-type: none"> Do the fish smell funny? Do the fish smell like diesel? 	Fragmentation	Extent of natural area (ha), number of patches or patch area
Climate Change 	Is it safe to travel?	<ul style="list-style-type: none"> Impact to seasonal travel 	Temperature Changes	Seasonal mean change of daily maximum temperatures (e.g., HDD, CDD)
	Ice thickness	<ul style="list-style-type: none"> Is ice thickness decreasing? Are winter temperatures warming? 	Winter Ice	Ice-on and ice-off dates since 1975
Community and Health 	How healthy are we?	<ul style="list-style-type: none"> Access to natural food sources versus expensive and less nutritious store-bought food 	Chronic Diseases or Conditions	Diabetes, Hypertension, COPD
	What about the youth?	<ul style="list-style-type: none"> Youth engagement and learning, youth concerns for the future 	Mental Health	Self-perceived mental health and sense
Economy 	Ecotourism	<ul style="list-style-type: none"> Changes over time e.g., there is more/the same/less ecotourism now than in the past because of changes in the delta 	Economic Development	GDP by industry, businesses incorporated

Figure 1: Distribution of Indicators based on Western and Indigenous/Co-created Worldviews



NbS Multi-Benefit Indicators Tool

This tool is the first resource of ACT's NSI Indicator Series, with the goal to help decision-makers, practitioners, and other interested parties identify and cluster indicators to assess the multiple benefits of NbS.



NSI: NbS Multi-Benefit Indicators Tool

CLIMATE ACTION

It is important to understand how NbS can support climate action. Natural systems are at risk from projected climate impacts. NbS approaches can minimize risks and vulnerabilities. In addition, by better anticipating how projected climate change and NbS strategies under more frequent and severe hazards. The protection and restoration of natural areas are considered reduction strategies in both the short and long-term ([IPCC](#)).

Category	NbS Multi-Benefit Indicator
Mitigation	
Carbon storage & sequestration	<ul style="list-style-type: none">Increased volume of carbon equivalent stored in forestIncreased volume of annual dioxide equivalent uptake
Avoided GHG emissions	<ul style="list-style-type: none">Avoided GHG emissions carbon dioxide equivalent area or non-forested land through conservation easement program)Avoided GHG emissions gas (kBtu), or energy cost from green roofs, shade
Adaptation	
Flood	<ul style="list-style-type: none">Increased stormwater storage within a wetland, stormDecreased peak flow volume sustainable forest managementImproved ecological protection restoration (e.g., m³ of sediment)Decreased coastal wave attenuated wave energy

INDIGENOUS KNOWLEDGES & LEADERSHIP

BIODIVERSITY

Climate change is negatively impacting ecological species depend. NbS must be used to enhance ensuring connectivity across scales, and support approaches can negatively impact biodiversity.

Category	NbS Multi-Benefit Indicator
Habitat availability	<ul style="list-style-type: none">Increased number of increased proportion canopy coverIncreased area regenerative areaReduced area of monoculture, etc.
Habitat quality	<ul style="list-style-type: none">Improved vegetation density, heightImproved environmental matter)
Landscape connectivity/ fragmentation	<ul style="list-style-type: none">Enhanced structural degree of habitat known as spatial as habitat connectivityImproved functional movement of species
Species richness, abundance, and diversity	<ul style="list-style-type: none">Increased speciesReduced numberIncreased numberReduced numberReduced number (e.g., roadkill, etc.)

To explore further:

- Conservation on Biological Diversity. (2014). [Conservation on Biological Diversity](#). (2014).
- City of Surrey. (2014). [Biodiversity Conservation Strategy](#).
- City of Surrey. (2014). [Biodiversity Strategy – Habitat Suitability Map](#).

Indigenous peoples have stewarded the land and space based worldviews, ecological knowledge systems, and in support of the health and resilience of territories and practice (e.g., co-existence with nature, cultural and culturally integral species, natural water cycle improvement leadership in identifying key risks, vulnerabilities, a territorial scale, can play a crucial role in advancing biodiversity.

Category	NbS Multi-Benefit Indicator
Fair	<ul style="list-style-type: none">NbS are planned, designed, and participation of Indigenous peoplesInterested parties are effortsBenefits are sharedThe definition and calculation value
Accountable	<ul style="list-style-type: none">All elements of NbS are understandable to allEvery NbS project includes grievance redress mechanismPartnership-building Reconciliation Committee the Seven R's (Respect, Reconciliation, and Responsibility)
Rights-based	<ul style="list-style-type: none">NbS benefits take an Indigenous Peoples aligning with the Indigenous PeoplesFirst Nations, Métis, and Inuit management and theFirst Nations, Métis, and Inuit and transparently control, access, and participation
Effective	<ul style="list-style-type: none">Diverse NbS values, strategies, and the value and valuationNbS activate positive

HEALTH, EQUITY, & JUSTICE

It is important to consider how every NbS project can support equitable, healthy, and resilient communities.

SUSTAINABLE SERVICE DELIVERY

Natural assets and blue-green infrastructure approaches may be used to complement engineered infrastructure, bolstering ecosystem services, while also lowering construction, operational, and maintenance costs (as compared to engineered solutions) over time. NbS must be able to maintain resilient under projected climate changes over time.

Category	NbS Multi-Benefit Indicator
Air quality improvement	<ul style="list-style-type: none">Reduced exposure to air pollutants (e.g., air quality improvement in CO, NOx, SOx, and PM) (⊕)Decreased healthcare costs (e.g., number of hospital visits, and mortality related to respiratory disease) (⊕)
Water quality and security improvement	<ul style="list-style-type: none">Reduced water pollution (e.g., water quality improvements due to sediment trapping, nutrient removal, and chemical detoxification from natural assets such as forests and wetlands or blue-green infrastructure, such as bioswales and rain gardens) (⊕)Improved natural water cycle through increased permeable and vegetated surfaces that enhance filtration and aquifer replenishmentIncreased percent of population with access to safe, clean drinking water (⊕)
Stormwater management	<ul style="list-style-type: none">Increased volume of stormwater runoff controlled (i.e., captured and managed at source/on-site) (e.g., maintained pre-development levels runoff volumes, capture of initial rainfall up to 5 mm from all rainfall events)Increased area of pervious surface (e.g., m² of pervious surface) or Greened Acre (i.e., an acre of impervious cover within the stormwater service area that has at least the first inch of runoff managed by bioswales, rain gardens)Increased volume of pollutants captured (e.g., reduced total suspended solid, such as e-coli) (⊕)Decreased cost for stormwater management (e.g., cost for stormwater and sewage treatment by volume (\$/m³))Reduced healthcare costs (e.g., number of hospital visits, and/or mortality related to gastrointestinal and/or dermatological diseases, especially due to combined sewer overflow) (⊕)
Noise control	<ul style="list-style-type: none">Decreased outdoor noise (e.g., a reduction in noise level of up to 10 decibels, reduced exposure to noise pollution from car or train traffic) (⊕)

practice may exacerbate inequity and injustice by (1; Wolch et al., 2014). Research shows that **vulnerable** systemic barriers to resources, opportunities, and social are often exposed to greater risks, such as flooding and (2021). Integrating equity indicators is essential to maximize would carefully develop their own equity indicators that complexities of equity concerns, incorporate local knowledge able steps to improve equity (Rosan et al., 2022).

NbS Multi-Benefit Indicator
vulnerable and underserved populations equally benefit from NbS (e.g., ensure that every person lives within a five minute walk of a park, greenway or other green space (Vancouver, 2020) (⊕); equal ratio between the percentage of residents in the bottom and top income groups who do not live within a 5-minute walk of a park (NYC, 2018) (⊕); proportion of target group reached by an NbS project (EC, 2021))
historically marginalized and underrepresented individuals meaningfully involved in the decision-making process with inclusive support (e.g., participation of vulnerable or traditionally under-represented groups (JNaLab, 2019); number of people reached through engagement activities (ICLEI, n.d.); diversity of interested parties involved (EC, 2021); involvement of interested parties in co-creation/co-design of NbS (EC, 2021)).
identities and needs of underrepresented groups are recognized, and the historical and systemic contexts for NbS are considered (e.g., assistant programs to help vulnerable populations' involvement in NbS incentive programs, such as rain barrel rebate programs provided in diverse languages (APA, 2023); anti-displacement strategies to avoid green gentrification (e.g., inclusionary zoning, affordable housing) (Rigolon & Christensen, 2019)

NbS Regulatory Mechanisms Toolkit

This toolkit is the first resource in ACT's NSI Strategy Series. The toolkit was developed to help local governments introduce new, or strengthen existing, regulatory mechanisms to advance the use of NbS in their communities.



NSI: NbS Multi-Benefit Indicators Tool

REGULATORY MECHANISMS AND RECOMMENDATIONS

LIST OF TOOLS














This section provides a hyperlinked list of all of the tools in the toolkit, as References, the latter of which contain additional recommendations and:

Tools for the Watershed Scale	
1.1	Regional Growth Strategy/Regional Conservation Strategy
1.1.1	General Recommendations
1.1.2	Urban Containment/Growth Boundary
1.2	Agricultural Land Reserve
1.3	Watershed Plan (Integrated Stormwater Management Plan)
Tools for the Community Scale	
2.1	Official Community Plan
2.1.1	Policies
2.1.2	Designation of Environmentally Sensitive or Significant
2.1.3	Environmental Development Permit Area (EDPA)
2.1.4	Marine/Shoreline Development Permit Area (DPA)
2.1.5	Other DPA's
2.1.6	Urban Containment/Growth Boundary
2.2	Zoning Bylaws
2.2.1	General Recommendations
2.2.2	Comprehensive Development Zones (Customized Zoning)
2.2.3	Density Averaging and Transfer
2.2.4	Conservation Zoning

TOOLS FOR THE WATERSHED SCALE

Recommendation	NSI Key Area	NbS Approach
1.1 Regional Growth Strategy/Regional Conservation Strategy		
1.1.1 General Recommendations		
Set a goal to maintain and enhance biodiversity ¹		
Promote integrated watershed management ¹		
Prioritize connectivity (e.g., wildlife corridors, riparian corridors, and greenways between natural areas) ^{1,2}		
Require buffers (secured by conservation covenant) for land adjacent to the Agricultural Land Reserve and for development on lots with sensitive ecosystems ¹		
Designate regional green zones, greenways, and habitat corridors ¹		
Acquire, protect, and restore ecologically significant areas ¹		
Prevent the conversion of agricultural land to non-agricultural uses ¹		
1.1.2 Urban Containment/Growth Boundary		
Establish urban containment boundaries, and secure a commitment that 90+% of growth will occur within the boundaries ¹		
Designate the boundary around existing serviced areas to encourage compact development ² and protect surrounding natural areas ¹		

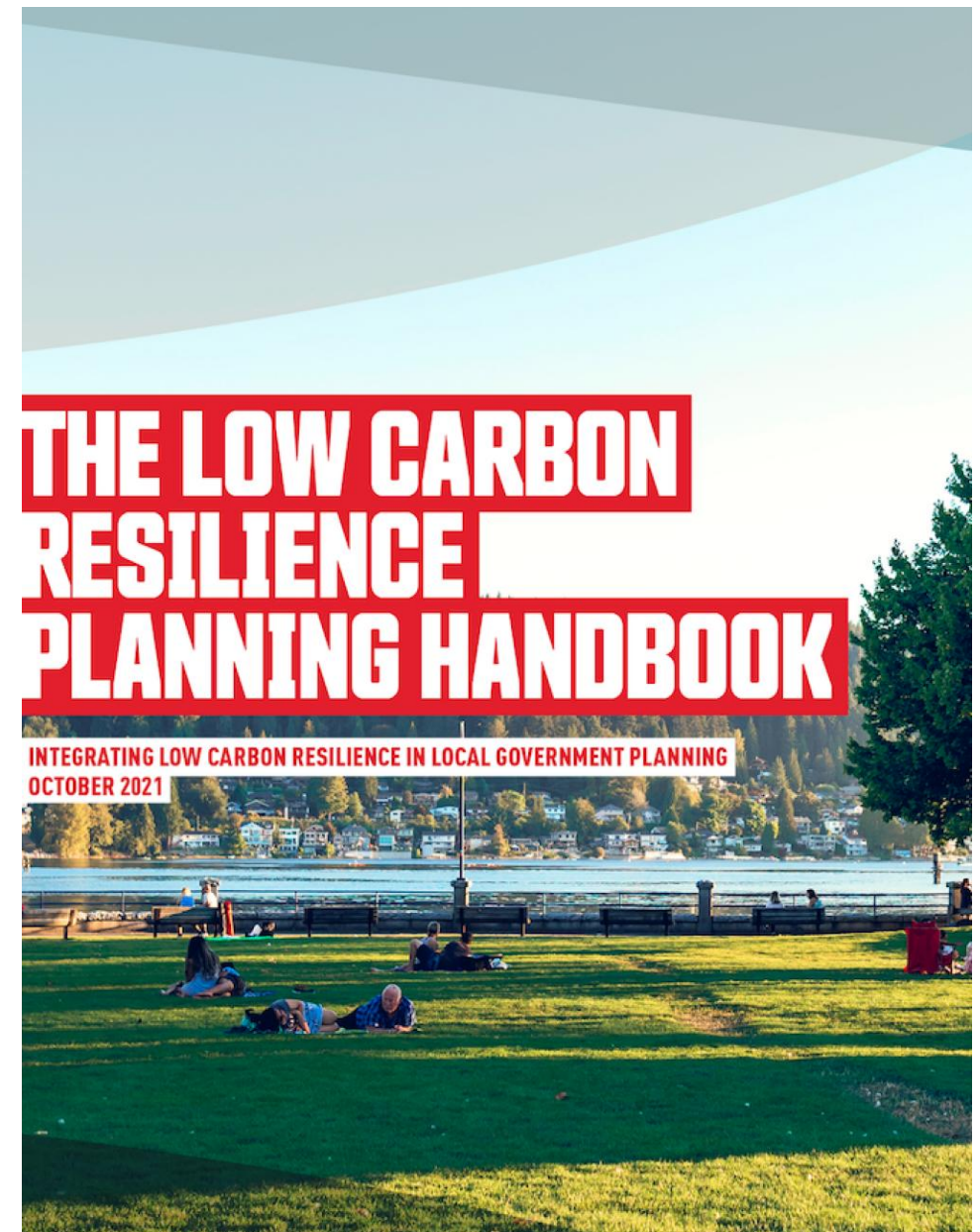
TOOLS FOR THE COMMUNITY SCALE

Recommendation	NSI Key Area	NbS Approach
2.1 Official Community Plan		
2.1.1 Policies		
For subdivisions near the Agricultural Land Reserve, require vegetated buffer areas, use cul-de-sacs instead of roads ending at the Agricultural Land Reserve (to avoid pressure to extend development into the Reserve), and ensure that changes to water flows will not increase flooding or reduce groundwater ²	  	EbM
Include policies to enhance air quality, water conservation, rainwater management, surface water quality/quantity, and groundwater quality/quantity ²		EbM
Include policies to address climate change mitigation, and align these policies with air quality goals ² (e.g., reducing greenhouse gas emissions, encouraging energy-efficient developments/green transportation, producing food locally, retaining carbon in vegetation/soils) ¹	 	EbM
Include policies to address climate change adaptation (e.g., resiliency, sea level rise, flood planning, wildfires) ¹		EbM
Establish criteria for evaluating and balancing trade-offs between goals (e.g., fire-proofing efforts should not remove brush stands that provide important habitat for wildlife or that buffer ecosystems from development) ²	 	EbM
Establish development standards that require a consideration of cumulative impacts (e.g., habitat fragmentation) as well as off-site impacts (e.g., increased risk of flooding or sedimentation downstream) ²	 	EbM
Prioritize connectivity (e.g., wildlife corridors, riparian corridors, and greenways between natural areas) ^{1,2}		EbM NAM BGI
Maintain large-lot (5+ hectares) policies for rural areas ¹		EbM NAM

Key LCR Resources

LCR Planning Handbook

- A step-by-step guide to LCR climate action planning.
- Details an ideal LCR planning approach but acknowledges that each community has their own context and challenges.
- No matter what stage of climate action a community is starting at, the idea is for the community to build upon previous and existing climate work.



Key LCR Resources

LCR Decision Tool

- A quick-reference guide to help local government leaders and decision-makers address climate readiness and sustainability in goals, policies, and practices.
- Allows users to appreciate the avoidable costs of a reactive approach and the managed risks of a coordinated and systemic approach.

Spectrum of Climate Response			
	Reactive	Proactive	Systemic
	Minimal Climate Response	Coordinated LCR Planning	Mainstreamed LCR Criteria
Attitude Consider your organization's internal viewpoint.	"Let's do the minimum and deal with the challenges as they come."	"Let's understand the synergies and trade-offs in the transition to a low-carbon resilient future."	"We understand every decision made now will impact community emissions and resilience in the long term."
Risks & Vulnerabilities Consider regional climate projections and how changes will impact overall community resilience via infrastructure and service levels and forecasts, social risks and inequities, and natural assets and ecosystems.	Climate is already impacting our infrastructure, and those impacts will intensify over time; our organization is starting to prepare for anticipated service disruptions.	We are anticipating climate impacts on our infrastructure and are working to minimize them; our organization is acting to prevent and minimize service disruptions.	We are actively adapting our infrastructure and will continue to do so to reflect changing conditions; our organization is working to avoid current and future service disruptions.
	Climate is disproportionately impacting our more vulnerable populations; our organization is preparing to deal with the risks.	We are anticipating climate will impact our more vulnerable populations and are working to minimize those impacts over time; our organization is acting to ensure that climate will not exacerbate risks to these populations.	We understand that climate change will amplify existing inequities and exacerbate risks to our vulnerable populations and are working to prevent compounding impacts and social costs over time; our organization is addressing social inequities in all decisions.
	Climate impacts on ecosystems and biodiversity are exacerbating our already-rapid natural capital losses; our organization is preparing to deal with the risks.	We are anticipating climate impacts on our ecosystems and biodiversity and are working to minimize them over time; we are inventorying, protecting and enhancing the natural capital of our community.	We view our ecosystems and biodiversity as critical assets under changing climate conditions; our organization is tracking, restoring, and expanding natural capital.

Moving LCR Forward

- Use an LCR lens to prioritize adaptation actions identified by the ICLEI Coastal Climate Resilience Collaborative project
- Working with the City of London and the Town of New Glasgow to tailor and apply the LCR approach to their current priorities
 - Municipalities within BC may use LGCAP funding towards LCR
- Interactive LCR Tool on SFU Website
- Forthcoming LCR Resources including:
 - LCR Strategies and Indicators Tool





LCR & NSI Resources

www.sfu.ca/act

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Additional Resources

Low-carbon Resilience and Nature-based Solutions

The following resources complement the information shared in the “Low-carbon Resilience and Nature-based Solutions” presentation. This was part of a four-part presentation series developed for the Coastal Climate Resilience Collaborative, a project that is supported by Natural Resources Canada’s Climate-Resilient Coastal Communities Program.

[ACT \(2021\) The Low Carbon Resilience Planning Handbook](#) (Port Moody highlights on pp. 18-19, 24, 54, 85, 95-95, 106, 119-121)

[ACT \(2022\) The Low Carbon Resilience Decision Tool](#) (Port Moody highlights on p. 10)

[Integrated Climate Action for BC Communities Initiative \(ICABCCI\) Partner Community Profiles: Climate Action and Key LCR Opportunities](#) (Port Moody highlights on pp. 12-13)

[The Natural Solutions Initiative Summary](#)

[NbS Regulatory Mechanisms Toolkit](#)

[NSI Multi-Benefit Indicators Tool](#)

[Multi-benefit indicators tool](#)

[Watershed Health and Resilience Indicators](#)

