

Attachment 4 - Benefits of Investing in Climate Action

Climate action: global and local impact

The United Nations considers climate change the defining issue of our time¹. Climate change impacts are being experienced around the world, but communities are grappling with these issues first hand with flooding, risk of wildfire, air quality issues, impacts to human health and many other impacts that strain municipal resources and services and reduce the liveability of communities, as experienced first hand in BC over the past year. Solutions to the climate crisis require considerable collective action and must reflect the unique values and challenges of each community.

So far, human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels. Global warming is likely to reach 1.5°C around 2030 if it continues to increase at the current rate². Figure 1 below depicts the impacts that just 0.5°C of warming can make on a global scale, noting the magnitude of increased impacts with every 0.5°C increase in global warming³.

Warming from anthropogenic emissions since the pre-industrial period will result in impacts for centuries to come and will continue to cause further long-term changes in the climate system, such as sea level rise and warming, with associated impacts⁴. Essentially, climate change impacts from greenhouse gas (GHG) emissions that were emitted in the past will continue to cause climate impacts into the future. This will require that society continues to adapt to these impacts already being experienced such as extreme weather and flooding. Furthermore, the more GHG emissions that continue to be emitted, the greater the variations and magnitude of climate impacts communities will face in the future.

The Intergovernmental Panel on Climate Change (IPCC) notes that adaptation initiatives that reduce the vulnerability of human and natural systems have many synergies with sustainable development such as ensuring food and water security, reducing disaster risks, improving health conditions, maintaining ecosystem services and reducing poverty and inequality⁵.

Acknowledging that the majority of the global GHG emissions are out of Port Moody's jurisdiction, local action is still required to ensure our communities health, safety, and economic sustainability and should remain a priority. For example, local air pollution from combustion engine vehicles can result in smog that can have significant impact on human health and the natural environment locally, especially in periods of extreme heat that are expected to increase in length and temperature with climate change. Climate change and its impacts across the globe will threaten the bottom line of businesses in a variety of ways. The frequency and intensity of extreme weather can damage factories, supply chain operations and other infrastructure, and disrupt transport. Drought can make water more expensive, which will likely affect the cost of raw materials and production. Climate volatility may force companies to deal with uncertainty in the price of resources for production, energy, transport, and insurance.

¹ <https://www.un.org/en/sections/issues-depth/climate-change/>

² IPCC special report on Global Warming of 1.5°C Summary for Policy Makers, 2019 : https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf

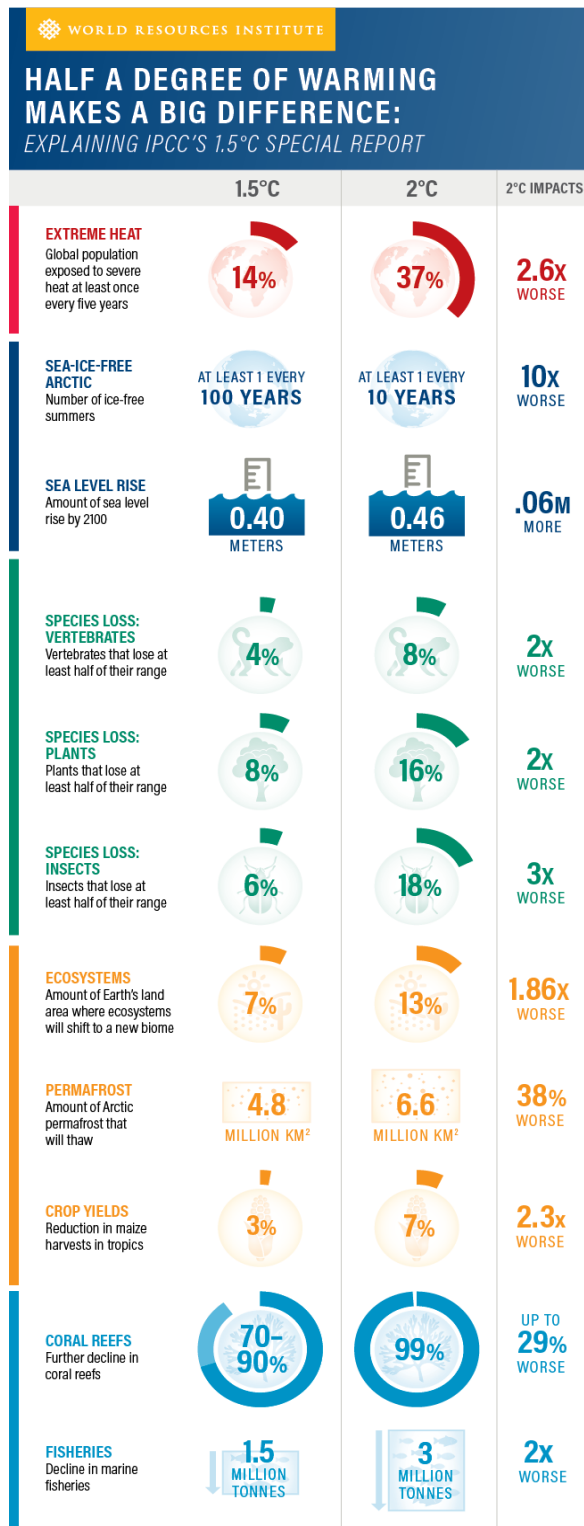
³ World Resources Institute, Differences between a 1.5°C and 2°C world: <https://www.wri.org/blog/2018/10/half-degree-and-world-apart-difference-climate-impacts-between-15-c-and-2-c-warming>

⁴ IPCC special report on Global Warming of 1.5°C Summary for Policy Makers, 2019 : https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf

⁵ Ibid.

⁶ World Resources Institute, Differences between a 1.5°C and 2°C world: <https://www.wri.org/blog/2018/10/half-degree-and-world-apart-difference-climate-impacts-between-15-c-and-2-c-warming>

Figure 1: The Difference in Climate Impacts between 1.5°C and 2°C of Warming⁶



As noted, in addition to adapting to climate impacts already experienced and reducing future impacts by tackling deep GHG reductions, there are many co-benefits associated with climate action that relate to municipal priorities. The table below summarizes climate action focus areas and associated co-benefits beyond climate action:

Climate Action Focus Area	Mitigation	Adaptation	Co-Benefits of Low Carbon Resilient Climate Action
Organization-wide	X	X	<ul style="list-style-type: none"> • Supports the local economy • job creation • Improves cost savings • Enhances local autonomy
Natural environment	X	X	<ul style="list-style-type: none"> • Improves biodiversity/habitat creation • Improves water retention/absorption • Improves air/water quality • Improves community liveability/vitality • Reduces burden on grey infrastructure • Captures pollutants • Increases carbon storage/sequestration • Reduces extreme temperatures
Emergency response and human health		X	<ul style="list-style-type: none"> • Improves community liveability/vitality • Reduces vulnerability to extreme temperatures and weather events • Improves equity/improvements for vulnerable populations • Improves human health and well being • Supports local food security initiatives • Reduces risks to property values
Infrastructure	X	X	<ul style="list-style-type: none"> • Reduces burden on water related infrastructure (e.g. drinking water supply, stormwater) • Reduces vulnerability to extreme temperatures and weather events • Optimizes energy use reduction • Improves cost savings
Land use and growth management	X	X	<ul style="list-style-type: none"> • Creates jobs • Reduces congestion • Improves community liveability/ vitality • Reduces burden on water related infrastructure (e.g. drinking water supply, stormwater) • Improves equity/improvements for vulnerable populations • Supports the local economy
Transportation and mobility	X	X	<ul style="list-style-type: none"> • Reduces congestion • Optimizes energy savings • Improves community liveability/ vitality • Improves human health and well being • Improves air quality
Waste reduction and management	X		<ul style="list-style-type: none"> • Optimizes resources • Reduces waste

			<ul style="list-style-type: none"> • Supports energy use reduction and clean energy transition • Improves air quality
Buildings	X	X	<ul style="list-style-type: none"> • Creates jobs • Supports the local economy • Supports energy use reduction and clean energy transition • Reduces extreme temperatures • Improves cost savings

Advancing Climate Action

There are several reasons to invest in and continue advancing climate action work such as:

- Many of the co-benefits associated with climate action are expressed as priorities in other city commitments such as:
 - Official Community Plan (e.g. community well-being, affordability)
 - Master Transportation Plan (e.g. reduced congestion)
 - 2019-2022 Council Strategic Plan (e.g. job creation)
 - Parks and Recreation Master Plan (e.g. increased access to greenspace);
- Access to a broader pool of available funding and increased change of successful funding applications using a low carbon resilience framework;
- Alignment with other levels of government and worldwide initiatives, including being prepared for any new climate-related regulations/requirements imposed on municipalities in the future;
- Increased opportunities to collaborate with partners that may result in cost and risk sharing;
- Opportunities to embed and address equity considerations in municipal decision-making; and
- Avoiding future costs to adapt to climate change.

The state of Canada's aging infrastructure leaves all levels of government, especially municipalities, particularly vulnerable to the impacts of extreme weather and climate change events. Approximately 60% of Canada's core public infrastructure is owned and maintained by municipal governments and the increased risks of failure caused by climate change heightens the urgency for action⁷. If communities do not accelerate action on climate change, the Canadian Government estimates that the cost of managing climate impacts could rise from \$5 billion per year in 2020, to \$21 - \$43 billion per year by 2050. Increases in extreme weather events such as ice storms, windstorms, and flooding are anticipated to increase Port Moody's clean-up costs in future years.

A recent study estimates that every \$1 invested now will save \$3–\$5 in the future. Research indicates that the benefits of investing in community adaptation and resilience outweigh the cost of such investments by a ratio of 6 to 1⁸. For example, wetlands that are maintained in their natural state can reduce flood damage costs to buildings by close to 40% under conditions of a severe rainfall event⁹.

⁷ Canadian Infrastructure Report Card, 2016

⁸ Martinez-Diaz, L., 2018, Investing in resilience today to prepare for tomorrow's climate change. Bulletin of the Atomic Scientists, 74:22, pp. 66-72

In addition, continued investment in climate action may open up new opportunities for Port Moody to reduce costs and align with other levels of government. Aligned initiatives are noted below:

- In December 2020, the Government of Canada released a new strengthened climate plan [A Healthy Environment and a Healthy Economy](#)¹⁰, which is supported by an initial \$15 billion investment. The new federal climate plan also includes:
 - Strengthened national emission reduction targets of 30% by 2030;
 - 100% by 2050; and
 - Starting in 2023, the carbon tax will increase by \$15 a tonne each year for the next eight years, to a total of \$170 a tonne by 2030. The gradual hike in the federal carbon tax is an effort to wean consumers off fossil fuels in favour of cleaner energy sources.
- The Province has set a new emissions reduction targets of 16% by 2025, 40% by 2030, 60% by 2040, and 80% by 2050.
- Through the Climate Change Accountability Act, the Province set sectoral emission reduction target ranges below. As part of legislated requirements, the Province will review the targets by 2025, with options to expand the number of sectors included and narrow the percentage ranges:
 - Transportation – 27 to 32%;
 - Industry – 38 to 43%;
 - Oil and gas – 33 to 38%; and
 - Buildings and communities – 59 to 64%.
- The Province released an updated province-wide strategy to drive down GHG emissions while creating a stronger economy, [StrongerBC](#)¹¹ and the first annual progress report on the CleanBC Plan, [The Climate Change Accountability Report](#)¹².
- Metro Vancouver has released seven [discussion papers](#)¹³ as part of the development of Climate2050, the Regional climate action plan, and has also released a backgrounder for the development of a Clean Air Plan. Together, these plans will outline Metro Vancouver's role in achieving regional air quality and greenhouse gas targets over the next 10 years.
- In December 2020, UBCM released its [recommendations on how BC's local governments can move towards a low-carbon future](#)¹⁴. Developed by UBCM's Special Committee on Climate Action and approved by the UBCM Executive, the recommendations outline concrete actions that can be taken for buildings, transportation, solid waste, resilience, land use-planning, social mobilization and governance.
- In December 2021 the Province released the [Roadmap to 2030](#)¹⁵ that outlines B.C.'s plan to expand and accelerate climate action to meet our 2030 GHG target and put us on the path to net-zero emissions by 2050.

⁹ Intact Centre on Climate Adaptation. (2017). When the Big Storms Hit: The Role of Wetlands to Limit Urban and Rural Flood Damage.

¹⁰ Environment and Climate Change Canada, A Healthy Environment and a Healthy Economy: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf

¹¹ StrongerBC: <https://strongerbc.gov.bc.ca/>

¹² BC Climate Change Accountability Report: https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/2020_climate_change_accountability_report.pdf

¹³ Metro Vancouver Climate2050 Discussion Papers: <http://www.metrovancouver.org/services/air-quality/climate-change/Climate2050/regional-priorities/discussion-papers/Pages/default.aspx>

¹⁴ UBCM Special Committee on Climate Action Recommendations: <https://www.ubcm.ca/assets/Resolutions~and~Policy/Policy/Environment/SCCA%20Recommendations%20Nov%202020%20FV.pdf>

¹⁵ Provincial Roadmap to 2030: https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf

- In 2022 the Province released the [Climate Preparedness and Adaptation Strategy](#)¹⁶. Actions prioritized for the strategy are supported by more than \$500 million of investments.
- In March 2022, the Government of Canada introduced [Canada's 2030 Emissions Reduction Plan](#)¹⁷, which provides a roadmap for the Canadian economy to achieve 40-45% emissions reductions below 2005 levels by 2030.
- As part of the X plan, the Government of Canada committed to develop Canada's first [National Adaptation Strategy](#)¹⁸ by working with provincial, territorial and municipal governments, Indigenous Peoples, and other key partners.

Building off of the co-benefits mentioned, climate action can also help to ensure that equity considerations are embedded in the City's climate action work by responding to the needs of the those most impacted by and vulnerable to climate change impacts.

Municipalities are responsible for ensuring that those who live, work, and play in their communities have access to the services that they need. In the face of climate change, municipalities need to ensure the continued delivery of high quality services, achieved through effective climate planning and action.

Although Port Moody's commitments to emissions reductions may appear small compared to impacts made by those around the world, smaller organizations such as Port Moody are often well positioned to act faster than larger ones. It is collective sustained action by all on a global scale that will ensure success against climate change.

¹⁶ Provincial Climate Adaptation Strategy: <https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/cpas.pdf>

¹⁷ Canada's 2030 Emissions Reduction Plan: <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030.html>

¹⁸ Canada National Adaptation Strategy: <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy.html>

The Impact of Land Use/Transportation Decisions on GHG emissions

Land use decisions made by local governments have a large influence on the environmental, social and economic health of communities. Density and land use mixes work together to determine travel distances between the places where residents live, work and play and the economic health of a neighbourhood and the potential for various energy sources and use are also influenced by the mix and density of land uses. Street design, combined with investments in transit and cycling infrastructure, greatly influence residents' transportation choices and the greenhouse gas (GHG) emissions that are produced from these choices. For example, higher housing density creates a foundation that enables a host of services and amenities that together reduce a community's GHG emissions. Without density, sustainable commercial modes become a challenge as transit is not supported enough to be frequent or reliable, walking and cycling distances are too far to make the case for an alternative to driving, and individual housing units and urban infrastructure are further distributed resulting in decreased energy efficiency. However, density alone is not enough to reduce GHG emissions. Density must be coupled with sustainable transit and a mixture of amenities needed for daily life¹.

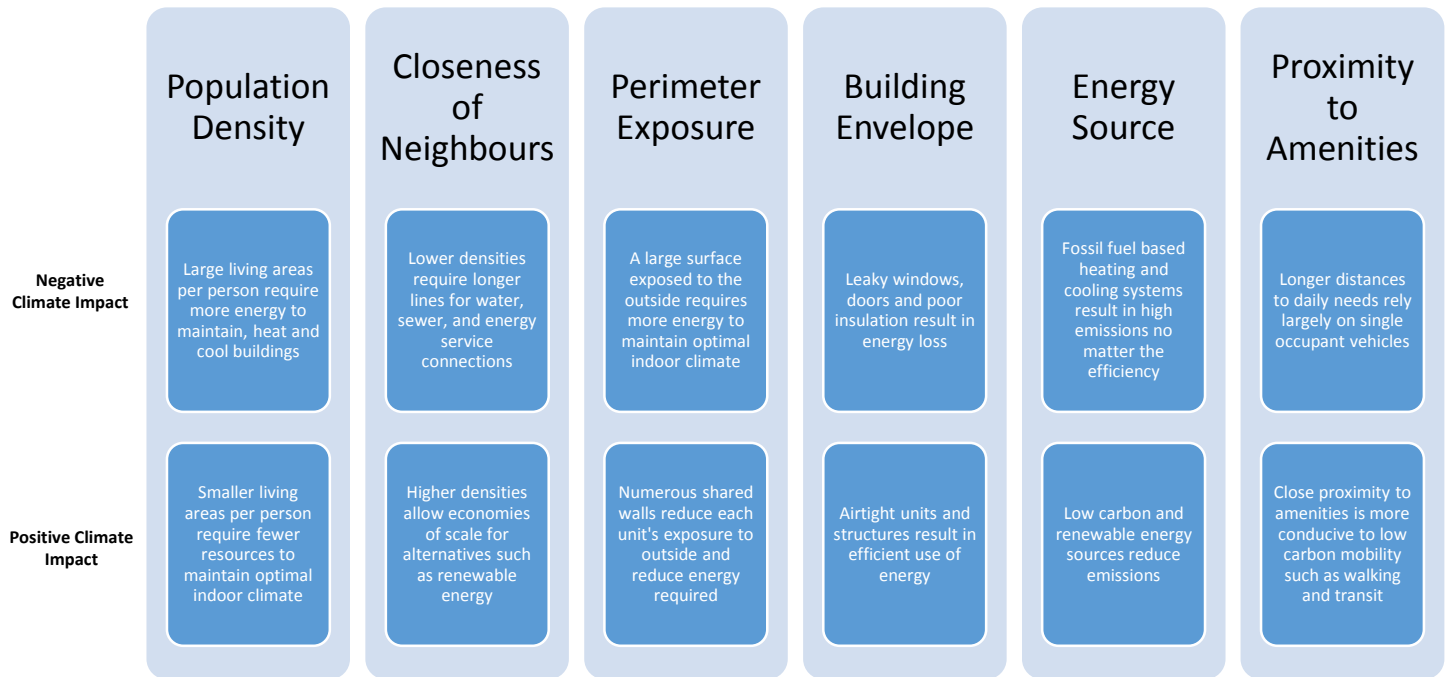
Port Moody is projected to grow to a population of 50,000 before 2050 and the Official Community Plan provides a vision of the form and location of housing to support this population growth, as well as the other components that shape our community including economic development, parks and recreation, arts and culture and more. Housing in Port Moody is shifting toward more multi-family development due to a dwindling supply of land suited for single-family homes; the promotion of compact growth patterns that support transit and preserve green space; and a desire to maintain housing affordability. This form of development is also central to reducing transportation emissions through modal shift away from single-occupancy vehicles to alternatives such as walking, cycling and transit. The completion of the Evergreen SkyTrain Extension has provided the City with a major opportunity to support a shift in modal split. More compact forms of housing need to be accompanied with planning for complete communities, where residents can live, work, play and shop, which has shown to reduce per capita greenhouse gas emissions from buildings and transportation. Figure 2 below demonstrates the relationship between urban form and GHG emissions.

Considering completed, compact communities under the low carbon resilience lens, impacts of density on climate vulnerability need to be addressed. Density is one of several major components affecting the ways in which urban areas will influence and be affected by a changing climate. Higher density areas can sometimes lead to concentrations of risk in particularly vulnerable locations such as health issues². On the other hand, density and complete community development can reduce risks and vulnerabilities associated with climate impacts such as improving social connectedness and closer proximity to daily needs and services such as healthcare and multiple modes of transportation.

¹ The Relationship Between Urban Form and GHG Emissions, 2010 : <https://open.library.ubc.ca/cIRcle/collections/facultyresearchandpublications/52383/items/1.0102495>

² United nations Population Fund, Urban Density and Climate Change, 2009: <https://www.unclearn.org/wp-content/uploads/library/unfpa14.pdf>

Figure 2: Relationship between Urban Form and Greenhouse Gas Emissions



**Figure adapted from "Bett et al. The Relationship Between Urban Form and GHG Emissions, 2010.*