Canada's National Adaptation Strategy

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Canada’s National Adaptation Strategy – Building Resilient Communities and a Strong Economy (PDF)

Minister’s Message for the National Adaptation Strategy

Canada’s changing climate is significantly affecting our society and environment. Every year, the country faces increasing record-breaking climate events, including wildfires, extreme heat, and floods. This is a critical time—the choices we make and the actions we take today will help decide the future of communities, livelihoods, the environment, and the economy.

Canada must be prepared and reduce risks across all levels of government so that communities can defend themselves against the worst impacts of climate change. In this respect, a sports metaphor works well: everyone in Canada must go on the offence against climate change by reducing our emissions, but we must also play defence to be better prepared for the changes we are already experiencing, because they are here to stay.

The National Adaptation Strategy presents a comprehensive blueprint to strategically reduce the risks that come with climate change impacts. This Strategy is the culmination of extensive engagement spanning more than two years. It represents input and hard work from countless people across Canada: provincial and territorial governments, Indigenous nations and organizations, the private sector, non-governmental organizations, adaptation experts, and youth. For that, I offer my sincere gratitude. The Strategy we have created lays out a shared vision for how all levels of government can focus policy efforts to protect our communities and effectively advance climate adaptation.

Although climate change affects communities differently, it is undeniable that our new climate reality is affecting us all. We need effective policy frameworks so that communities throughout the country can grow and prosper. We must strive for equity, as well as climate and environmental justice. This is the path forward to resilience.

The Government of Canada cannot do this alone. Canada's first National Adaptation Strategy provides a whole-of-society blueprint that sets not only long-term goals, but also near- and medium-term targets to help every region and every community achieve them. We do not yet know all the challenges that a changing climate will present, but we are committed to working together to reduce the risk and protect our health, our communities, and our prosperity.

This is an opportunity to chart a path to a resilient future. As a country. Together.

The Honourable Steven Guilbeault, Minister of Environment and Climate Change

Executive summary

Climate change is affecting Canada in ways that are as diverse as Canada itself. Across the country, warming temperatures and changing precipitation are contributing to more frequent and devastating events like heatwaves, floods, droughts and wildfires. Canada's coastal areas are experiencing sea-level rise, coastal erosion and changes to aquatic ecosystems. In the North, permafrost is thawing and ice and snow are changing and disappearing. These changes affect the very foundations of our lives – our homes and communities, our health and well-being, cultures, our livelihoods, and the natural environment upon which we depend. Many more lives will be threatened by the impacts of a warming and more volatile climate in Canada that will continue to intensify for decades to come—unless we create a more climate-resilient society.

> **Climate change adaptation** means planning for and acting on the anticipated impacts of climate change. It involves making changes to how we live and what we do before climate change impacts happen (anticipatory) as well as being ready to respond to increasingly likely and frequent extreme events (reactive).

By taking action to adapt to the changing climate along with reaching net-zero emissions, we can build communities and economies that are able to thrive for generations to come. The scope of the climate change challenge is vast and growing. Adaptation is finding new ways of making decisions, building communities and businesses, and protecting each other and the places we value in anticipation of climate change. It means ensuring that we are all better able to prevent, prepare, respond, and

recover from climate impacts today and in years to come. Taking ambitious and collective action to adapt in ways that are equitable and inclusive will help us ensure that everyone's lives and welfare are protected from the impacts of a changing climate.

There is a strong foundation of adaptation actions in Canada. Governments, Indigenous Peoples, the private sector, academia, non-governmental organizations, youth, citizens and residents are leading innovative and impactful solutions for their communities and regions. More effort, more investment, and more coordination are now required to dramatically scale up these adaptation solutions and to ensure that climate impacts do not exacerbate existing inequities in Canada.

The National Adaptation Strategy outlines a shared path to a more climate-resilient Canada. It establishes a shared **vision** of what we want our future to look like and sets out a common direction for action across **five interconnected systems** that are at the heart of our lives and communities.

- Disaster Resilience
- Health and Well-being
- Nature and Biodiversity
- Infrastructure
- Economy and Workers

Adaptation solutions can better prepare us for the more frequent, severe and unpredictable **climate-related disasters** we are already facing. Adaptation can empower people to protect their **health and well-being**; it ensures that our health, food, and social systems are better equipped to manage climate risks and support the diverse components of well-being such as mental health and food security. Incremental and transformational changes to our **infrastructure** and **economy** help to avoid major losses to our properties, communities, critical infrastructure, and vulnerable

economic systems – while presenting an opportunity to address existing inequities and the climate's disproportionate impact on marginalized and underserved populations. Restoring, conserving and protecting the **natural environment** with an understanding of future climate can support the land and everything that relies on it.

The National Adaptation Strategy is underpinned by a set of **guiding principles** acknowledging that how we reach our goals and objectives is just as important. For each system, the Strategy sets **long-term transformational goals, medium-term objectives and near-term targets** to ensure that we have direction for climate change resilience in the country.

Achieving the Strategy's goals and objectives requires **whole-of-society action**. Local, regional and sectoral adaptation plans are in place in many parts of the country and are well placed to set priorities and advance action on the highest risks and unique circumstances. A number of **federal, inter-governmental, and Indigenous-led action plans** will be developed to scale-up and better coordinate adaptation efforts – while respecting the jurisdiction and responsibilities of different orders of government and rights holders.

The Strategy's **monitoring and evaluation framework** will measure our collective progress and help adjust for future scenarios – informed by up-to-date information on climate risks, impacts and solutions from across the country. In addition, regular progress reports will communicate the state of climate change preparedness in order to ensure transparency on the effectiveness and efficiency of adaptation measures in Canada.

Introduction

As a whole-of-society blueprint, the National Adaptation Strategy is intended to guide action in Canada to better adapt to and prepare for the impacts of climate change. Climate change impacts affect all aspects of society and collective action is urgently needed. This Strategy uses “we” and “our” to represent individuals, governments and other institutions, academia and the private sector.

The Strategy addresses the key climate change risks in Canada, including those identified by the Canadian Council of Academies, and the recent *Canada in a Changing Climate* reports:

- **Physical infrastructure** from extreme weather events, such as damage to homes, buildings, and critical infrastructure such as roads and power distribution.
- **Coastal communities,** such as infrastructure, property, and people, from inundation, saltwater intrusion, and sea-level rise and storm surges.
- **Northern communities’** widespread impacts including those related to thawing permafrost, reduced sea ice, and increased marine traffic, are affecting infrastructure, harvesting and food security, safe travel and access to critical facilities, security and way of life.
- **Human health and wellness** from hazards accompanying increased extreme weather events, heatwaves, lower ambient air quality, and increased ranges of vector-borne pathogens.
- **Ecosystems and species** including threats to biodiversity and ecosystems such as water supply shortages in summer months.
- **Canada’s economy** and increasing economic costs through impacts on production, operations and/or disruption to supply chains, including food production and security. This is intrinsically connected to the risks

related to international geopolitics affecting Canada, such as immigration and humanitarian aid or loss and damages.
- **Fisheries and fish stocks** from changing marine and freshwater conditions, ocean acidification, invasive species and pests.
- **Canadian forestry** due to changing weather patterns, increased frequency of extreme weather events, including those that increase prevalence of wildfires, and increased range of invasive species and pests.
- **Governance capacity** to provide public services, manage and respond to climate risks, and maintain the public's trust.

Prepared by the Government of Canada, the Strategy reflects two years of engagement with provincial, territorial and municipal governments; First Nations, Inuit, and Métis representatives; key experts and stakeholders; and people from across Canada

The Strategy complements other national and Pan-Canadian strategies that are building resilience and reducing greenhouse gas emissions in Canada, including Canada's 2030 Emissions Reduction Plan, National Housing Strategy, Poverty Reduction Strategy, Canadian Wildland Fire Strategy, the Emergency Management Strategy for Canada, and others.

The Strategy recognizes that adaptation is a global challenge that requires action from all countries, and it will support Canada's contribution towards meeting the global goal on adaptation under the Paris Agreement.

Part I: Climate change impacts in Canada

Canada's climate is irreversibly changing and we are already witnessing and experiencing significant climate change impacts. Canada's climate is and will continue to warm rapidly, with a rate that is already two times faster than the global average and three times faster in the North. We must

reduce emissions to limit the extent of climate change and avoid ecological and socio-economic tipping points, understanding that climate change impacts will continue even after global net-zero emissions are achieved.

Climate change is already increasing the number of acute, high-impact weather- and climate-related events in Canada:

- Extreme heat events are the deadliest weather-related events in the country. For instance, the 2021 heat dome resulted in at least 619 deaths in British Columbia, and others across western Canada.
- Floods are one of the most costly and widespread hazards, with annual coastal flood damage to buildings and homes projected to increase from $60 to $300 million in the next 30 years [1] .
- Wildfires increasingly threaten communities, infrastructure, and industry and wildfire smoke can disperse over large areas affecting human health near and far. In addition to direct costs combating wildfires (about $1 billion per year), indirect costs from property loss, industrial shutdowns, health-related expenses, etc., are expected to rise in Canada.
- The increasing rate, severity and unpredictability of climate-related natural disasters are straining Canada's emergency response systems, and impacting the reliability of supply chains, putting our food security and livelihoods at risk.

Pervasive and slow-onset climate change impacts such as permafrost thaw and sea-level rise are changing landscapes, redrawing coastlines, impacting livelihoods and cultural identities.

In the coming decades, climate change will bring more frequent, intense and extreme weather events than the heatwaves, floods, severe wind, and wildfires we experience today. All the while, slow-onset impacts such as

sea-level rise will continue to evolve. Acting now to prepare and adapt to climate change can protect the well-being of all people and the environment in Canada.

Health and well-being

Climate change is harming our health and well-being. The latest national science assessment, Health of Canadians in a Changing Climate: Advancing our Knowledge for Action, describes how climate change is increasing the frequency and severity of existing health risks related to extreme heat, wildfires, floods, air pollution, declining water quality and availability, and vector-borne and chronic diseases. Climate change is driving the emergence of new infectious diseases and food safety risks. Disruptions to food systems are increasing risks of food insecurity, particularly in the North. It is creating additional stress and increasing costs for the people, facilities, and programs that work together to protect our health, including healthcare infrastructure like hospitals and medical clinics. In an already strained health system, climate change widens existing inequities for access to health services, particularly for Indigenous People.

Climate change hazards worsen existing mental illnesses and impact mental well-being by disrupting our sense of community, safety and connection. Climate-related disasters can lead to negative psychological outcomes such as anxiety, depression, post-traumatic stress disorder and substance use disorders. Young people are feeling a sense of loss as they see a future that is potentially less prosperous, peaceful, and healthy. The impacts of climate change on the agricultural sector can affect the mental health of farmers. Climate change is also profoundly affecting cultural identities—particularly of First Nations, Inuit, and Métis—and overall sense of well-being through loss of culturally-significant places, traditional

livelihoods and practices, access to country food, and language. This is compounded by existing inequities driven by historic and ongoing colonization, such as the loss of language and thus Indigenous worldviews.

Natural environment

Our natural environment is affected by climate change in both dramatic and subtle ways. A thriving natural environment is foundational for all forms of life, including people, our society and well-being. Widespread wildfires, frequent drought conditions, severe storms and permafrost thaw have a range of impacts on the environment, including loss of, and shifts in species, habitat and ecosystems. These have lasting impacts on the natural environment and add to the existing effects of pollution and habitat destruction.

As humans, we exist as part of the natural environment, not in separation from it. Our relationship with the land is threatened with the degradation and loss of ecosystems that we rely on for our basic needs, like productive soil for food, access to clean air and water, or protection from floods. The environment also supports our recreational, health, and spiritual needs. Many of our cultural identities are closely tied to our connection with the natural environment, where the intrinsic value of nature shapes our sense of self and connection to the land.

Built and natural infrastructure

Extreme events, such as floods or wildfires, as well as slow-onset changes, such as thawing permafrost, extreme heat, or rising sea-levels, can damage and destroy our infrastructure. Across Canada, we have seen the recent impacts that climate change can have on our homes and the infrastructure that we rely on everyday for essential services.

Insured damages from Hurricane Fiona in 2022 are now estimated to be over $800 million. Local communities and businesses were severely impacted by storm, with critical infrastructure, including fishing wharves and small harbours damaged or destroyed.

Lost and damaged infrastructure endangers people's health and safety, while disrupting businesses, market access, and food, energy and trade supply chains. The damage caused by climate change creates major repair and rebuilding costs, which deepens existing inequities and impacts the well-being of our communities. At a minimum, the impacts of climate change on infrastructure are making it harder for us to get around, work, or access food and water. At worst, we will experience loss of life, our homes or entire communities.

Economy

Across Canada, climate change is affecting our livelihoods, impacting the work we do to earn an income as well as activities that are essential to everyday life, like growing, hunting, or gathering traditional foods. Disruptions to livelihoods affect our ability to secure the necessities of life and provide for ourselves and our families.

In the agriculture and agri-food sector, farmers are already experiencing the devastation of increased drought, floods and wildfires. This affects the long-term economic viability of the sector, farmers and rural communities, with cross-cutting impacts on our health and food security.

Forestry, fisheries, agriculture, mining, energy, transportation, and tourism are some of the sectors facing greater climate change risks. Our supply chains are vulnerable to climate-related impacts, especially when close trading partners are affected. Impacts to economic and financial systems affect investments, insurance costs, incomes, and job security. The costs of repairing climate-induced damage and recovering from climate-related disasters reduce or prevent households, businesses and governments from making new investments that address existing inequities like food insecurity, drive productivity or improve overall quality of life. In as early as 2025, Canada is expected to experience $25 billion more in losses due to anticipated climate damages, which equates to half of the projected GDP growth [2] .

Climate change disruptions have both direct and indirect impacts on people in Canada, including inequitable recovery from disasters, the loss of jobs or profitability, inflation, decreased value of homes and savings, increased danger or difficulty at work, on the land, or in accessing basic needs. Loss of livelihoods can also have direct connections to our well-being, culture, and sense of self.

Intersecting vulnerabilities:
Of the 619 people who died in the June 2021 heat dome in British Columbia, 67% were over 70 years old, 56% lived alone, and 61% were located in low-income neighbourhoods.

Disproportionate climate impacts

Climate change affects some people and communities more than others. It amplifies existing vulnerabilities and socio-economic inequities, resulting in some populations including Indigenous, Black, Racialized, low-income, 2SLGBTQI+, and women experiencing climate change impacts more severely. People with health conditions and disabilities, the very young or older adults or people who experience structural inequity, poverty, isolation, or discrimination are particularly vulnerable to the impacts of climate change.

Marginalized and underserved populations have limited capacity and resources to prepare for climate change and are more likely to live in places that experience higher exposure to climate impacts like flood risk zones, or in neighbourhoods and buildings with limited cooling options during heat waves.

Indigenous Peoples

Indigenous Peoples experience climate impacts in unique and serious ways that challenge their identity and culture. First Nations, Inuit and Métis have deep relationships and cultural connections with the land, waters, ice, animals, and plants. They also have long histories of living on, adapting to, and stewarding their environments. Indigenous Knowledge Systems, which include intergenerational knowledge, legal systems, governance, values, worldviews, and relations are a source of strength and resilience for Indigenous Peoples, and position them as leaders in adapting to climate change.

First Nations (both on and off-reserve), Inuit and Métis experience disproportionate impacts from climate change compounded by historic and ongoing traumas associated with colonization, including cultural suppression, disruption of families, forced displacement from traditional territories, and degradation of ecosystems. The resulting lack of clean and safe drinking water; racism, discrimination, and inequity in Canada’s health

systems; infrastructure, housing, and service gaps; lower socio-economic status; and food and energy insecurity, all affect the capacity of Indigenous Peoples to adapt to climate change impacts.

First Nations, Inuit and Métis' close relationships to the natural environment mean that climate change impacts can have deep and serious effects on their individual and collective well-being. Changes to the environment (e.g., loss of important species, shifting landscapes, and limited access to land and water) disrupt culture, language and knowledge-sharing activities. These changes also undermine First Nations, Inuit and Métis' abilities to exercise their rights, impacting traditional livelihoods, food security, and mental health outcomes.

The North

Climate change is a daily, lived reality in the North, where it is happening faster than anywhere else in Canada. Strong social bonds and sense of belonging, as well as the agility of people in the North has been a source of strength—particularly for Indigenous Peoples. However, climate change is creating rapid and irreversible impacts on landscapes, ecosystems and the way of life for northerners.

Climate change impacts in the North include more frequent and intense extreme weather events such as floods and wildfires, as well as accelerated coastal and river erosion, changing and unpredictable snow and ice conditions, shifts in vegetation and species migratory patterns, and thawing permafrost. These impacts are compromising the structural integrity of homes, roads and critical infrastructure. Limited access to land impacts hunting, gathering food, access to cultural sites, Indigenous Peoples' ability to participate in and transfer traditional practices, and mental and physical health of northerners. Climate change impacts are draining lakes and contaminating sources of water, reducing access to drinking water and resulting in loss of habitat for marine, fresh water, and

terrestrial species. Despite the widespread impacts, climate data and projections remain limited or inaccessible in the North, preventing the assessment of climate risks and development of adaptation planning tools such as climate hazard maps.

Climate change exacerbates existing inequities in the North. Inadequate infrastructure already poses a threat to health, well-being and livelihoods across the North, failing to serve the most basic needs of northerners—particularly Indigenous Peoples. Most communities rely on water and diesel being trucked, shipped or flown in; housing insecurity is worse than anywhere else in the country and medical facilities are often not equipped to provide basic care. Community remoteness, high construction and transportation costs, a short building season, high population growth and limited financial resources contribute to infrastructure and services gaps in the North.

Over-reliance on existing systems and lack of backup options create compounding impacts. An emergency road closure due to flooding or landslides can quickly lead to food and energy shortages, delays in emergency response, and lack of access to medical care. It is estimated that more than half of winter roads in the North could become unviable in the next 30 years, and the costs to maintain airport runways will grow exponentially until mid-century [3] . Medical care often requires a flight to the South, and overcrowding and poor housing conditions worsen climate impacts on northerners and their capacity to protect their health and well-being.

Long-standing economic and development policies have resulted in some of the highest rates of food insecurity in the North, further exacerbated by ongoing climate impacts such as unreliable winter roads and loss of sea ice cover. The market and country food systems in the region are diverse and complex – particularly for Indigenous Peoples. Climate-related delays

disrupt transportation of market foods into communities, reducing the availability and quality of imported foods and heightening unaffordability. Climate conditions also make travel on the land, water and ice more difficult and dangerous for hunters and harvesters, restricting their self-reliance and the accessibility of country foods, the amount of time spent on the land, and the transfer of Indigenous Knowledge. These activities—essential for northern food security and central to cultural and mental well-being of Indigenous Peoples—continue to be threatened by the irreversible impacts of climate change [4] .

Coastal communities

Coastal communities are more vulnerable to the impacts of climate change. Canada is home to the longest coastline in the world. Over seven million people live in coastal communities in Canada, and more than $400 billion in goods are shipped annually through Canadian ports. More frequent and severe wind events, storm surges, and sea-level rise are already exposing people, properties, coastal infrastructure and heritage sites to flooding, saltwater intrusion, and coastal erosion. Likewise, the natural environment on which coastal communities' livelihoods and ways of life rely on is impacted, including shifts in abundance and migratory patterns of fish and shellfish due to changing ocean conditions. These compounding impacts reduce the viability of coastal communities and reliable access to ports, harbours, and cultural and recreational sites.

Urban and rural vulnerabilities

Where we live can affect our experience with climate change impacts. Over 80% of people in Canada live in urban areas, including more than half of First Nations, Inuit and Métis. The services, critical infrastructure, and financial resources in cities and towns can make it easier to adapt to climate change. However, concentrated populations, aging infrastructure, degraded ecosystems and social inequities are sources of vulnerability for

urban areas. Highly paved landscapes, more common in lower income neighbourhoods, can exacerbate climate change events such as extreme heat and floods, increasing their impact on vulnerable and marginalized populations.

People living in rural areas often rely on the natural environment for livelihoods, influencing the structural determinants of health and well-being. Rural communities usually have fewer financial resources and institutional capacity than urban areas, and experience challenges with implementing health system and infrastructure changes. They often have strong informal economies, social networks and connections to place, community and culture that are essential for resilience.

Persons with disabilities

Persons with disabilities face greater climate risks, including increased fatality rates from extreme weather events; their exclusion from designing adaptation actions can be a matter of life and death. Decision makers, including all orders of government, need to take into account the unique needs and intersectional perspectives of persons with disabilities (e.g., following the ‘Nothing Without Us’ principle).

Climate change adaptation

We can adapt to be better prepared. *Adaptation* means planning for and acting on the anticipated impacts of climate change. It involves making changes to how we live and what we do before climate change impacts happen in order to reduce their impact (anticipatory) as well as being more ready to respond to increasingly likely and frequent extreme events

(reactive). It includes adjusting our decisions to account for the changes to the climate that we know are still to come. Adaptation actions will help us build our *resilience*, in other words, our capacity to prepare for, respond to, and recover from impacts and disruptions. With the right actions, including concerted efforts to reach net-zero emissions, we can continue to thrive in a changing climate.

Figure 1. Climate change impacts and challenges in different regions across Canada.

▶ Long description

Adaptation cycle

Adaptation is a complex and on-going process. Generally, adaptation requires a cycle of activities: understanding present and projected climate change impacts, identifying options for action and developing plans,

implementing and mainstreaming adaptation actions, monitoring progress, evaluating the effectiveness of actions, and using lessons learned to calibrate investments and prioritize actions.

Figure 2. Canada's adaptation cycle

▶ Long description

Incremental and transformational adaptation

There are many ways we can adapt and build resilience to climate change. Adaptation involves addressing the urgent impacts we are facing in a targeted way. Adaptation actions are often incremental. For example, protecting shorelines and wetlands can help protect coastal communities from the threats of sea-level rise, flooding, and storms. Changing building codes to account for more extreme conditions can prevent future property damage.

There are some climate vulnerabilities and risks that require changes to the broader socio-economic systems. Adaptation in some areas requires transformational change in how we make decisions, work together, build communities, interact with nature, and look out for one another. Our society and economic systems were built on the assumption that our future climate would look much like the climate of the past and our ecosystems would remain unchanged. As Canada's climate changes, we can no longer make decisions based on those assumptions. Innovative, equitable and transformational changes are needed to prepare for some of the climate's most extensive and irreversible impacts.

Socio-economic case for adaptation

Adaptation saves money. The Canadian Climate Institute estimates that every $1 spent on adaptation measures can result in $13-$15 in total benefits [5] . For example, urban forests in the City of Toronto can generate $3.20 for $1 invested by lowering cooling costs, improving air quality, and reducing strains on storm water infrastructure. In some cases, the economic benefits can be significant. It is estimated that implementing climate-resilient building codes in Canada has a benefit-cost ratio of 12:1—equivalent to a 1,100% return on investment [6] . The social and environmental benefits of adaptation, while harder to quantify, are equally important.

Adaptation actions are cost-effective and a positive investment for today and for the future. Climate change adaptation is essential and will generate many benefits, including spurring innovative solutions, technologies and jobs that can help minimize damages to communities, retain ecosystem services, reduce economic shocks to supply chains, sustain livelihoods and maintain social cohesion, and most importantly, save lives.

National direction

A national strategy can help us work together. There is a strong foundation of actions in Canada to address and plan for the impacts of climate change. Across the country, different orders of governments, Indigenous Peoples, civil society and the private sector are taking action to understand climate change impacts and vulnerabilities and to prepare for the new reality. Annex A provides an overview and examples of existing action.

Despite the leadership of and innovation by different actors, to date our collective actions have often been insufficient or disjointed and have not resulted in the pace and scale of adaptation actions needed across the country. Everyone in Canada needs to consider climate change impacts in everyday decisions. For governments and businesses, this is called *mainstreaming*. As climate impacts become more severe and frequent, and the costs mount, incorporating adaptation considerations in health, social, environmental, infrastructure and economic decisions-making is critical to ensure that our collective efforts keep pace.

We can work together through increased collaboration, coordination and ambition to address the magnitude of the challenges ahead. Our adaptation solutions need to be as great in scale, scope and reach, as the climate change challenges they are addressing. This national strategy sets out a common purpose and shared goals to help all key actors and people in Canada begin moving together in the same direction. It helps us work together more effectively by building on existing efforts and outlining clear roles and responsibilities. It sets collective priorities for urgent action on the threats we are already facing and also focuses on the structural changes we need to make over the long term.

This Strategy can help ensure that our collective actions do not leave anyone behind. By holding equity and inclusion at the centre of our shared goals, the Strategy promotes climate justice and begins to address the

factors that make people more vulnerable to climate change, while advancing the concept of environmental justice.

Part II: The path to a climate-resilient Canada

A vision for climate resilience in Canada

All of us living in Canada, our communities, and the natural environment are resilient in the face of a changing climate. Our collective adaptation actions enhance our well-being and safety, promote justice, equity, and reconciliation with Indigenous Peoples, and secure a thriving natural environment and economy for future generations.

The National Adaptation Strategy sets an overarching direction for all our work to increase resilience to the impacts of climate change. It includes five interconnected systems of disaster resilience, health and well-being, nature and biodiversity, infrastructure, and economy and workers. The Strategy's long-term goals, medium-term objectives, and near-term targets capture national level efforts, and recognize regional and local priorities to address unique climate risks and circumstances. The Strategy also includes considerations for structural needs in underserved and historically excluded populations that lower their capacity to adequately prepare for climate change.

Figure 3. The framework for Canada's National Adaptation Strategy

▶ Long description

All orders of government, Indigenous Peoples, the private sector, various institutions, and all people in Canada have a role in realizing the Strategy's goals, objectives, and targets. The Strategy's implementation is informed and supported by existing climate and adaptation plans across the country. In addition, a series of new action plans will outline key priorities for federal, inter-governmental, and Indigenous-led actions.

Guiding principles

The Strategy's guiding principles will help direct and inform decisions on how adaptation actions are designed and advanced in associated implementation plans. As important as the vision, goals, and objectives in the Strategy, is how we achieve them. The Strategy recognizes the importance of adaptation actions that are developed with full participation of rights holders, in line with the *United Nations Declaration on the Rights of*

Indigenous Peoples, and those historically excluded from decision making. Other key international frameworks—such as the *United Nations Convention on the Rights of Persons with Disabilities*—can help to drive inclusive actions.

1. Respect jurisdictions and uphold Indigenous Peoples' rights

Adaptation efforts must respect the jurisdictions of local, provincial, territorial, national, and First Nations, Inuit, and Métis governments, and act to accelerate and build upon their existing efforts. Adaptation efforts can only be effective when they are rights-based, include local leadership, and reflect unique regional and local climate change conditions and circumstances, including values and cultures. This is particularly true in the North, where unique challenges will require unique northern solutions. Action should focus on opportunities for collaboration and aligning efforts, in order to advance more efficient and shared outcomes.

Adaptation efforts must uphold the rights of First Nations, Inuit, and Métis, including constitutional, treaty, and inherent rights to own, use, develop, control, conserve and protect the environment of their lands, ice, waters, territories and resources, in accordance with the minimum standards set out in the United Nations Declaration on the Rights of Indigenous Peoples.

2. Advance equity and climate and environmental justice

Adaptation efforts must act to advance climate justice and more broadly environmental justice. This includes addressing and minimizing social, gender, racial, and intergenerational inequities, which requires diverse perspectives at the table—including youth and persons with disabilities. It also includes prioritizing populations and communities at greater risk of climate change impacts—e.g., due to historical and ongoing practices and policies that shape lived experiences, capacity, and access to resources. As

we build systems and solutions that are more climate resilient, we have the opportunity to address systemic inequities that make people more vulnerable.

Efforts to implement action and evaluate success should be transparent and inclusive. Adaptation actions should close existing equity gaps and ensure that vulnerable and marginalized populations have their basic needs met in order to build resilience to climate change.

3. Take proactive, risk-based measures to reduce climate impacts before they occur

Decision-making should be informed by an understanding of climate risks and vulnerabilities to minimize impacts and costs before they occur and support emergency preparedness. Action to protect the most vulnerable communities and ecosystems should be prioritized. Adaptation and disaster risk reduction efforts should be mutually supportive, taking an integrated risk-based approach across all hazards and informed by best available science and Indigenous Knowledge Systems.

4. Maximize benefits and avoid maladaptation

All adaptation efforts should consider and maximize benefits towards people’s well-being and provide as many co-benefits as possible for the economy and the natural environment. Adaptation efforts should also avoid maladaptation, or unintended negative effects, such as increased greenhouse gas emissions, nature loss, additional harm to equity-seeking groups, or the reduction of climate resilience in other parts of society.

Climate change resilience in key systems

This section sets direction for climate change resilience in five interconnected systems of society in Canada: disaster resilience, health and well-being, nature and biodiversity, infrastructure, and the economy and workers. The system approach goes beyond individual hazards, risks, and assets to implement solutions that are most effective and efficient. The Strategy recognizes that there are important connections among these systems, and adaptation actions in one area can also support outcomes in another.

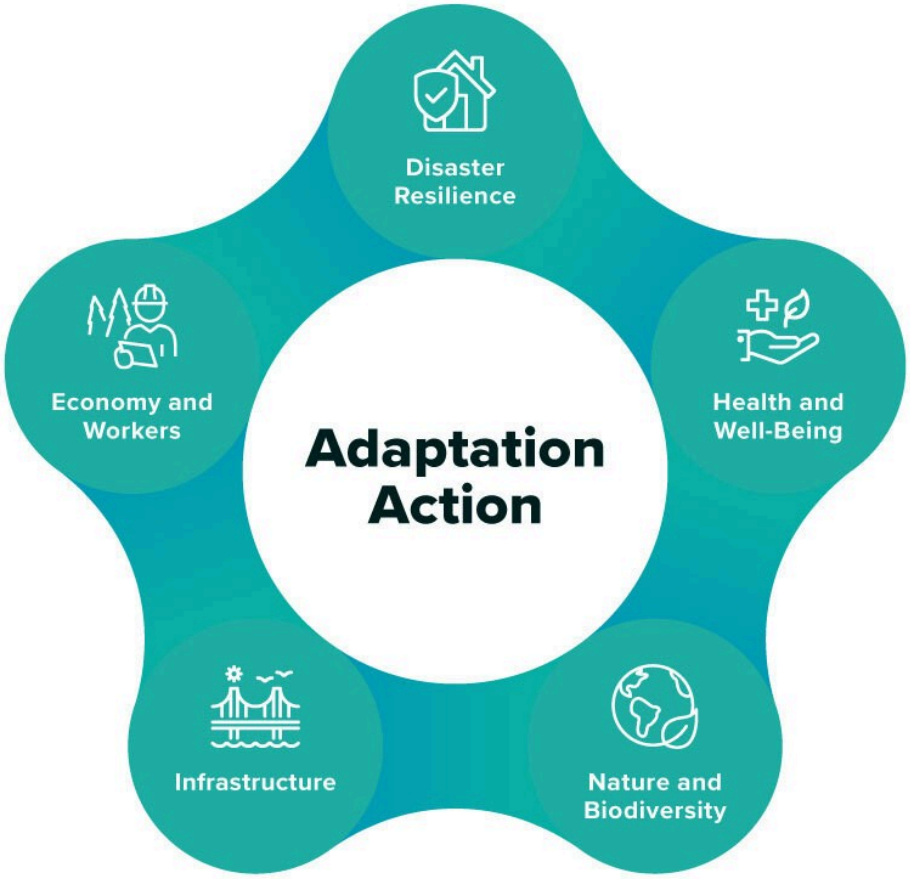

Figure 4. The five systems of the National Adaptation Strategy

▶ Long description

Disaster resilience

As the frequency and severity of climate-related disasters increase, the economic, human, and ecological costs to respond to and recover from those disasters is increasing. As a signatory to the UN Sendai Framework, the Government of Canada has committed to improving our resilience strategies, preparedness efforts, early warning systems and cooperation to reduce disaster risks. One of the key elements in the Sendai Framework is the importance of adopting a whole-of-society approach, which seeks to leverage existing knowledge, experience, and capabilities within emergency management partners to strengthen the resilience of all.

Reducing disaster risks, particularly through proactive adaptation, has proven to be more economical than the cost of response and rebuilding. Building disaster resilience is multi-faceted and requires effective governance, whole-of-society collaboration and expertise, strong communication on disaster risk and tools to help address climate change.

Improved emergency preparedness, data generation and communication, as well as capabilities that are meant to support climate resilience and adaptation in the long term are more important than ever. Climate-informed emergency management mechanisms are essential for building climate resilience. Flooding and wildfire events in 2021 and 2022 have demonstrated the gaps in Canada's emergency management system and the need for a proactive, all-hazards approach to successfully navigate a climate-impacted future. This approach establishes both short- and long-term goals to build resilience to current and emerging climate risks (e.g., wildfires, floods, and extreme heat), among others.

The Emergency Management Strategy for Canada, Canada's official disaster risk reduction strategy, guides federal, provincial, and territorial governments and their respective partners, including Indigenous partners,

to take action to improve emergency management capacity and reduce disaster risk. Robust mitigation and prevention, preparedness, response and recovery systems, which are accessible to all, are essential to reduce the number of affected people, the mortality, the economic loss, and the critical infrastructure damage resulting from climate-related disasters.

Goal

Communities and all people living in Canada are better prepared to prevent, mitigate, respond to, and recover from the hazards, risks and consequences of disasters linked to the changing climate; the well-being and livelihoods of people living in Canada are better protected; and overall disaster risks have been reduced, particularly for vulnerable sectors, regions, and populations at greater risk.

Objectives

With climate change bringing more frequent and severe disaster events, the objectives in this system reflect the need to reduce the number of people impacted by disasters, as well as enable people living in Canada to better prevent, to respond to, and recover from these events.

1. There is a measurable reduction of people in Canada impacted by acute and slow-onset climate-related hazards, with due consideration to how vulnerable communities can better access resources and support systems.
2. Effective, efficient, and accountable governance mechanisms are established for stronger disaster risk reduction coordination through a whole of society approach.

3. All communities are able to implement timely and successful emergency response plans that are readily accessible to everyone in the event of a disaster.
4. National, provincial, territorial, and regional readiness, mitigation, and recovery plans and policies integrate the latest evidence informed by risk and resilience assessments as well as local and Indigenous knowledge and are inclusive of the whole of society.
5. People affected by disasters face minimal disruptions to lives and livelihoods, and are presented with possible long-term housing solutions within a reasonable period of time.

Targets

- By 2025, a federally-led table that includes federal, provincial, and territorial governments and Indigenous partners has engaged regularly to align and coordinate emergency management adaptation activities to promote disaster resilience.
- By 2025, 60% of Canadians, including northerners and Indigenous Peoples, are aware of the disaster risks facing their household.
- By 2028, the federal government, provinces, and territories have worked collaboratively to prioritize at least 200 higher-risk flood areas for new flood hazard maps / regional level modelling, and have taken evidence-based risk mitigation actions in accordance with scientific guidance.
- By 2025, 50% of Canadians have taken concrete actions to better prepare for and respond to climate change risks facing their household.
- Communities, including northern and Indigenous communities, in zones of high risk, as identified by provinces and territories, develop wildfire community prevention and mitigation plans by 2030, with up to 15% implemented by 2028.

- By 2028, a national recovery strategy is developed which sets out shorter timeframes for displaced individuals to be able to return to their homes or resettle after climate change disaster events.
- By 2025, complete the modernization of the Disaster Financial Assistance Arrangements to incentivize disaster risk reduction and improve recovery outcomes from large-scale disasters.

Health and well-being

Health is defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity [7] . Many factors influence our physical, mental, and social well-being—including access to the land, cultural practices, and traditional foods, as well as social determinants of health such as access to health services, physical environments, housing, food security, social supports, culture, and income. Effective and equitable adaptation requires targeted support for people in Canada with limited access to these health determining factors and those at higher risks of climate impacts.

Climate change also requires that we strengthen the resiliency of our health facilities and systems and prioritize those who are most affected. Health systems include the people, places, programs and policies that work together to protect health, and are broader than health facilities and health care. Adaptation requires integrating climate change considerations into health system decision-making processes, including development of the expertise and knowledge on climate change impacts (e.g., cardiovascular implications of extreme heat and wildfire smoke), as well as implementation of solutions to track and address acute and long-term health risks (e.g., access to mental health services to address eco-anxiety).

Supporting physical and mental health and well-being in the face of climate change is closely tied to other systems including disaster resilience, a thriving natural environment, a strong and resilient economy, and resilient infrastructure.

Goal

The health of all people in Canada is safeguarded and supported by a climate-resilient and adaptive health sector that has robust and agile systems and services that account for and support the diverse components of well-being.

Objectives

Objectives in this system aim to reflect the breadth of action to protect health and well-being in the face of various climate change impacts. This includes both minimizing climate change risks to health, collaborating with the diverse actors who improve health in Canada, and better preparing the health system to manage the increased demand for health services and the added burden of new climate risks.

1. Health systems have the expertise, knowledge, and resources needed to identify climate change-related risks and take equitable, evidence-based action to protect health.
2. Health authorities have identified the extent to which climate change is impacting health and have established methods for tracking future health impacts and evaluating progress towards protecting health and reducing risks.
3. People are protected from urgent climate-related health risks such as extreme heat, infectious diseases, wildfire smoke, foodborne hazards

and impacts to traditional foods, poor mental health outcomes, and others.
4. Climate action across all sectors promotes good health and prioritizes measures that have multiple benefits (e.g., protecting health and improving environmental sustainability).

Targets

- By 2030, health systems have identified risks, developed adaptation plans, and are measuring progress towards climate-resilience.
- By 2026, 80% of health regions will have implemented evidence-based adaptation measures to protect health from extreme heat.
- By 2040, deaths due to extreme heatwaves have been eliminated.
- By 2030, consideration of health impacts and benefits are integrated into key climate change tools, guidelines and standards.

Nature and biodiversity

Canada's natural environment includes land-based ecosystems such as grasslands and forests, freshwater ecosystems such as rivers, lakes and wetlands, as well as coastal and marine ecosystems. These ecosystems and their biological diversity are often connected through intricate links and support all living organisms.

For the natural environment to thrive in the face of climate change, we need to shift our perspective to see people as part of and active participants in nature, and we must advance stewardship approaches that take into account current and projected climate impacts on ecosystems and biodiversity. Our efforts to halt and reverse nature loss should prioritize solutions that help the natural environment thrive and respond and recover from current and future climate-related changes. Factoring adaptation

measures into biodiversity decisions and conservation practices (e.g., ecological representation, connectivity and refugia) can also provide co-benefits, such as increased carbon sinks and increased access to the land.

Indigenous Knowledge Systems encompass different perspectives for understanding environmental complexity, and provide strategies to reduce, manage and adapt to environmental change in a place-based and holistic manner. In a changing climate, it is critical to prioritize Indigenous Knowledge Systems and support Indigenous self-determined actions and initiatives aimed at protecting biodiversity and maintaining the adaptive capacity of ecosystems.

In addition to having intrinsic value, ecosystems serve an important role in providing for our needs, such as food, clean water, clean air, as well as climate regulation. As ecosystems shift in response to climate change, adaptation measures—including nature-based solutions—need to address the impacts on the built environment, food systems, and our health and well-being. For example, if selected for their resilience to climatic extremes, tree canopy in urban areas can lower surface temperatures and provide relief during heatwaves; wetlands can reduce the risk of flooding; reforestation can improve water availability for agriculture and drought mitigation.

Goal

Biodiversity loss has been halted and reversed and nature has fully recovered allowing for natural and human adaptation, where ecosystems and communities are thriving together in a changing climate, with human systems existing in close connection with natural systems.

Objectives

The objectives in this system aim to reflect both the need to support the resilience of ecosystems with a focus on those most affected by climate change, and the power of nature to provide adaptation solutions.

1. Human activities are transformed to halt and reverse biodiversity loss, and enhance ecosystem connectivity and resilience.
2. The ecosystems most affected by climate change are monitored, restored and managed to ensure their continued viability and adaptive capacity.
3. First Nations, Inuit and Métis governments, organizations, and communities have the opportunities and means to pursue self-determined priorities for ecosystem stewardship initiatives to adapt to climate change.
4. The use of nature-based solutions is accelerated to increase resilience and maximize co-benefits such as reducing stress on grey infrastructure, increasing social benefits of nature, and climate change mitigation.

Targets

- Conserve 25% of our lands and waters by 2025 and 30% of each by 2030, working to halt and reverse nature loss by 2030 in Canada.
- Recognize and support at least 3 ecological corridors by 2025, to improve ecological connectivity between protected and conserved areas.
- By 2026, support new and existing Guardians initiatives, establish new Indigenous Guardians Networks, and support Indigenous communities to build capacity to establish more Indigenous Protected and Conserved Areas.

- Establish 15 new national urban parks by 2030 to conserve nature, connect people with nature, and advance reconciliation with Indigenous Peoples.

Infrastructure

Different types of infrastructure deliver critical services to our communities for day-to-day life, including transportation, health care, utilities, communications, and trade. Infrastructure—including built and natural elements—keeps us sheltered and connected, moves people and goods, provides safe drinking water and places for recreation, sport and culture.

Despite facing significant climate risks, infrastructure has been identified as one of the top sectors for climate change resilience potential. This requires locating, planning, designing, managing, adapting, operating and maintaining infrastructure with climate change impacts in mind. Predictable, reliable, and secure infrastructure services should meet the needs of all communities fairly and equitably, including those with existing gaps and those with infrastructure at highest risk of climate impacts, such as northern and Indigenous communities. Building increased adaptive capacity for Indigenous communities means addressing the root causes of certain vulnerabilities, including closing the infrastructure gap and existing degradation.

Climate-resilient infrastructure policies and programs can result in significant avoided damages and provide co-benefits, such as enhanced livability and protection of Canada’s biodiversity. There is a need to significantly scale up investment to support Canadian communities in making their infrastructure more resilient to a changing climate, in ways that match the magnitude and time horizon of the risks being faced while considering the interdependencies across infrastructure systems. Additionally, natural infrastructure solutions are increasingly seen as win-

win investments that support traditional infrastructure outcomes, such as stormwater management, while delivering valuable co-benefits, such as climate change resilience, reduced pollution, and carbon sequestration.

Decision-makers and professionals across the country require tools and support for constructing and maintaining climate-resilient infrastructure. New climate-informed guidance and standards are needed to ensure resilient infrastructure that reflects current and future climate conditions, as many existing specifications are outdated. For example, updated floodplain maps and future extreme heat information are vital for optimal facility placement and design. Canada recently established a new governance model to unify construction code development, integrating provinces and territories into the national process to better respond to jurisdictional priorities and harmonize construction codes nationally.

As provincial, territorial, Indigenous, and local governments own and operate around 97% of publicly-owned infrastructure in Canada, accelerating progress towards climate-resilient infrastructure and safe and livable communities requires cooperation and alignment between different orders of government and other key actors, such as the private sector, professionals, and civil society.

Goal

All infrastructure systems in Canada are climate-resilient and undergo continuous adaptation to adjust for future impacts to deliver reliable, equitable, and sustainable services to all of society.

Objectives

The objectives in this system reflect the necessary levers that can support adaptation action throughout the lifecycle of infrastructure in Canada and prioritize infrastructure in communities at highest risk of climate change impacts.

1. Technical standards, planning and decision-making processes have been updated or developed to embed climate change in all decisions to locate, plan, design, manage, adapt, operate, and maintain infrastructure systems across their lifecycle.
2. Public and private infrastructure decision-making is informed by system-wide assessments of, and planning for, current and emerging climate change risks.
3. Infrastructure decisions prioritize benefits for marginalized populations and communities at highest risk of climate change impacts.
4. All new investments in infrastructure apply resilience criteria and adopt climate change guidance, standards, and future design data to maximize the long-term benefits of infrastructure outcomes.

Targets

- Starting in 2024, resilience to climate change impacts is factored into all new federal infrastructure funding programs.
- By 2026, additional climate change resiliency considerations are incorporated into 3 Canadian Codes (National Building Code, Canadian Highway Bridge Design Code, and Canadian Electrical Code).
- By 2030, 80% of public and municipal organizations have factored climate change adaptation into their decision-making processes.
- By 2030, robust guidance, codes and standards covering the top climate change risks for key public infrastructure systems are available to be adopted by all infrastructure decision-makers.

- Government of Canada, in partnership with First Nations, Inuit and Métis will continue to make immediate and long-term investments to support ongoing work to close the infrastructure gap by 2030*

Note: * indicates that this represents a structural need in underserved and historically excluded populations, where progress would enhance capacity to adequately prepare for climate change.

Economy and workers

Climate change has direct and indirect impacts on the economy, including on employment, savings and investment, and trade. Climate change risks to individual sectors and reliant communities are often crosscutting in nature – for example, disruptions in the agriculture sector can have major impacts for food production (manufacturing, imports, services) and food security. Climate change can also have serious impacts on important cultural livelihoods for First Nations, Inuit and Métis, including the ability to harvest and share country foods. Given that virtually all economic sectors in Canada's coastal regions (particularly fisheries, tourism, transportation, energy and infrastructure) will be either directly or indirectly impacted by climate change, innovative and regional adaptation solutions will be needed to minimize economic impacts.

Economic sectors need to assess their unique risks in order to increase their resilience to climate change. For a resilient Canada, businesses and communities need workers with the skills and knowledge to adapt. Supply chains need to account for more frequent disruptions; climate-exposed industries, particularly those at highest risk such as forestry, agriculture, fisheries, and tourism, require access to financial incentives that account for the changing climate; and the economic valuation of climate risks should be incorporated into decision making. The approach to economic sectors, including insurance underwriting, will need to adapt to support

behaviours and products that enhance resilience. If the anticipated costs and climate impacts are well understood and changes in operating environments are routinely assessed, climate change may also present opportunities for Canadian businesses to remain globally competitive.

Collaboration will be required to address both individual and shared climate change challenges. Economic impacts cross jurisdictional lines and can often be influenced by climate change impacts beyond Canada's borders. Decisions, behaviours, and products that reduce climate disruptions on individual and community livelihoods and on economic sectors need to be promoted, and smart investments should be aligned with climate change resilience. Shared challenges can be addressed by building sector-specific adaptation knowledge, skills, tools and resources. Actions must be proactive, uphold Indigenous rights, support land-based and blue economies, and provide equitable access to opportunities.

Goal

Canada's economy is structured to anticipate, manage, adapt, and respond to climate change impacts; and to actively advance new and inclusive opportunities within a changing climate, particularly for communities at greater risk, Indigenous Peoples, and vulnerable economic sectors.

Objectives

The objectives in this system aim to capture the breadth of levers to incorporate climate change considerations into economic decisions, from building the business case and incentives for adaptation to developing a

skilled and resilient workforce. The objectives also aim to focus on economic sectors most at risk from climate change.

1. The business case for adaptation is advanced through research and the knowledge is accessible, tailored, culturally appropriate, and useful.
2. Policy and financial instruments provide the right incentives and remove disincentives for proactive adaptation.
3. Canada has a skilled, diverse, and adaptable workforce that is supported by education, training, knowledge and skills development to respond to future impacts of climate change, including within Indigenous and northern economies.
4. Economic sectors most vulnerable to the impacts of climate change routinely assess climate change impacts on the operating environment and incorporate adaptation considerations into decisions.
5. Adaptation increases the resiliency and reliability of Canada's supply chains in the face of climate change impacts which strengthens Canadian competitiveness and supports robust and sustainable economic growth.

Targets

- By 2027, 80% of coastal communities and 60% of businesses located in coastal regions are implementing adaptation actions to increase climate resilience and reduce the economic impacts of climate change.
- By 2027, 70% of the members of relevant professional associations (e.g., civil engineers, planners, landscape architects, accountants, and others) have the capacity to apply climate change adaptation tools and information and communicate the business case for adaptation measures to their clients or target audiences.
- By 2027, 80% of highly exposed businesses include adaptation to climate change in plans and strategies in order to strengthen their

competitiveness. Sectors at highest risk include forestry, agriculture, fisheries, energy, mining, transportation, and tourism.

Foundational objectives and targets

This section outlines the foundational elements that are necessary to underpin effective adaptation. These cross-cutting objectives support resilience across the Strategy's five systems of disaster resilience, health and well-being, nature and biodiversity, infrastructure, and economy and workers.

Knowledge and understanding

It is important that adaptation is informed by evidence of how the climate is changing and how these changes affect different people and communities now and in the future. This evidence base should reflect diverse ways of knowing including scientific and Indigenous Knowledge Systems. Canada has a strong foundation; however, key gaps remain on the current and future climate impacts (e.g., in the North). Data and diverse knowledge systems need to be accessible and targeted to the needs of different users and regions. Investing in new data and analyses can address gaps, including economic valuation of climate risks, building the business case for investment in adaptation, and foundations needed for innovation.

Informed decisions require an understanding of climate risks and vulnerabilities, as well as knowledge of available solutions and resources. Adaptation will involve choices and may entail trade-offs. Education, training, and awareness raising are the main ways to communicate the

need for incorporating adaptation into decisions and for taking urgent actions. Shared understanding can help us work together to improve our collective resilience to climate change.

Objectives

1. A robust evidence base for adaptation is in place through development, stewarding and sharing of existing and new data, knowledge (including Indigenous Knowledge and local knowledge), environmental and socio-economic analyses, and other ways of knowing.
2. Indigenous Knowledge Systems and science are fairly and sustainably invested in, and ethical and equitable engagement is upheld in adaptation knowledge co-production, in line with First Nations, Inuit, and Métis, research protocols and data sovereignty.
3. Everyone in Canada is informed about climate risks and vulnerabilities. Available information is accessible, easy to understand, and designed for different audiences.

Targets

- By 2024, over 180,000 people in Canada per year access climate services to support adaptation decision making.

Tools and resources

To turn awareness into action, people in Canada need access to tools, measures, and resources to address the climate risks they face. Local, regional and institutional capacity to consider climate change in decisions is key to taking action to adapt. Those at higher risk of climate impacts, including Indigenous Peoples, youth, racialized, and vulnerable groups and communities, require additional support to keep pace. Preparing for

climate change impacts will require sustained public and private investments, but the cost of delays or inaction is much greater. The current approach—too often fragmented, short-term, and project-based—is insufficient to address the climate change challenges Canada is facing. There is a need to increase and shift investments to support coordinated and proactive measures that help avoid or reduce climate-related damages.

Objectives

4. Everyone in Canada has equitable access to the tools and supports needed to prepare for, reduce, and respond to climate change impacts.
5. Sustained, sufficient, and equitable public and private funding is in place to support adaptation to climate change.
6. Local, regional, and institutional capacity for adaptation contributes to self-sufficiency and participation in adaptation actions.

Targets

- By 2030, all northern and Indigenous communities have resources to develop, or have access to, culturally appropriate tools and information to address climate risks

Governance and leadership

Strong leadership, clear responsibilities, and accountability are needed to align and improve adaptation actions across society. Adaptation governance mechanisms can bring together governments with differing jurisdictions, Indigenous Peoples and marginalized groups. Effective governance supports decisions to address climate impacts taking place now (e.g., heatwaves, wildfires, and floods) and slow-onset changes that will worsen over time (e.g., sea-level rise, habitat change, and thawing permafrost). Both immediate and slow-onset changes can affect an

individual's sense of place, culture and identity, and mental health and well-being. Effective governance also helps reduce the risk that action in one jurisdiction does not become a barrier or compromise solutions for adaptation for others.

First Nations, Inuit and Métis have distinct identities and cultures, and experience different circumstances in relation to climate change adaptation. They hold rights and titles to lands and territories, and have unique cultural traditions, knowledge systems, worldviews, governance systems, and longstanding experience as stewards of the land. They must each be supported and enabled to choose their own actions to build climate change preparedness in ways that align with their values and are effective and meaningful to their unique contexts. Supporting self-determined action across the five systems should include efforts to both provide opportunities and build capacity for First Nations, Inuit and Métis communities to be fully engaged, and to have the capacity, coordination, and shared information to support their own climate decision making. The scope and range of these capacity needs varies widely from community to community, and must be carefully considered as we collaborate to increase climate resilience for all of Canada, as per the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

The strength of our relationships and solidarity among members of a community, as well as the extent of common resources available to plan and prepare for the impacts of climate change, are important determinants for effective adaptation. Our ability to cope with, withstand, and recover from climate change impacts depends on the strength of our social connections, sense of belonging to our communities, and care for collective well-being. In turn, adaptation measures present an opportunity to improve community resources and support cultural practices that build social cohesion as we experience inevitable climate impacts. Climate

change will affect cultures, language, and traditional livelihoods in the north; however, these unique factors (including an interconnected view of health and well-being) may also convey important adaptive capabilities that will benefit all Canadians.

Sharing knowledge across borders, learning from international best practices, and improving inter-jurisdictional collaboration can help Canada learn from others and can position Canada as an international leader in climate change adaptation.

Objectives

7. Effective governance for climate change adaptation is established and is inclusive of people who are disproportionately impacted by climate change.
8. First Nations, Inuit and Métis are prepared for and have the capacity to respond to climate change through self-determined adaptation actions that are grounded in their cultures, preferences, and community priorities.
9. Adaptation efforts improve social connections, reduce isolation, and support cultural practices and places to enhance overall community resilience to climate change.
10. Innovative solutions, through exchange of best practices and cross-jurisdictional cooperation, enhance adaptation outcomes across the country and position Canada as a global leader in supporting climate resilience.

National Adaptation Strategy timeframes, foundations and evaluation

The Strategy is designed to evolve.

The federal government, in consultation with different orders of government, Indigenous Peoples, experts and stakeholders, will update the Strategy regularly with the next update expected in 2030. Associated action plans will be developed on five-year cycles to allow sufficient time for implementation, assessment of results, and consideration of anticipated climate impacts. The federal government will lead the development of progress reports midway through the Strategy's cycles, informed by actions across the country. The progress reports will provide a snapshot of collective progress in achieving the Strategy's goals, objectives and targets; inform policy and investment decisions; and promote transparency and accountability to the public.

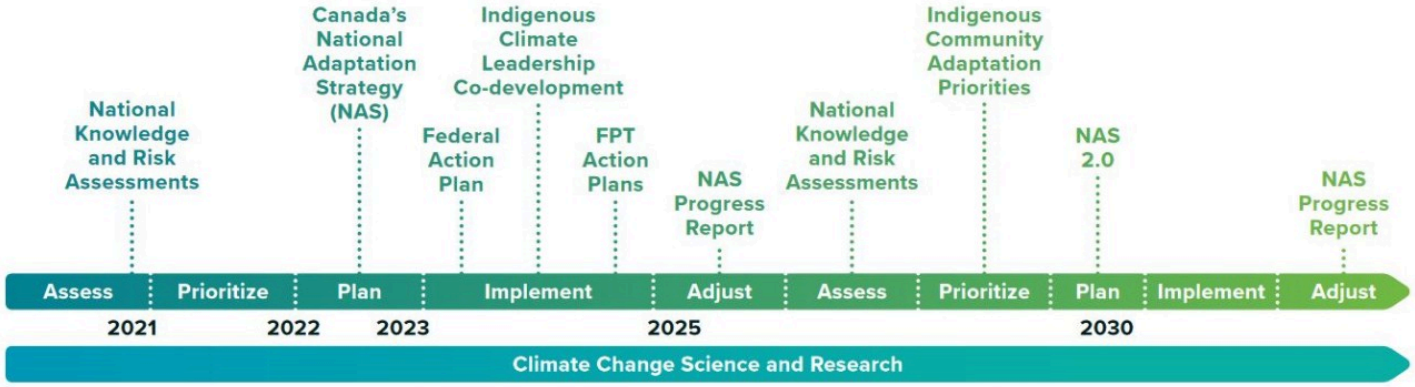

Figure 5. National Adaptation Strategy timeframe. "FPT" stands for Federal-Provincial-Territorial. National Knowledge Assessments are produced in a multi-year process; the most recent series on Canada's climate, impacts, adaptation and resilience, included *Canada's Changing Climate Report*, the *National Issues Report*, and the *Health of Canadians in a Changing Climate*, among others.

▶ Long description

The Strategy will keep up-to-date on the understanding of climate change risks.

The changing climate is putting us in an unprecedented situation. The Strategy is informed by our current science, risk assessments, as well as Indigenous Knowledge Systems. Federal, provincial, territorial, and

municipal governments have all contributed assessments, as have Indigenous Peoples and organizations, the private sector, non-governmental organizations, academics, and other climate change experts. Up-to-date and accessible information on current and projected climate change risks will continue to inform the Strategy's implementation and subsequent updates of the Strategy and action plans.

Implementation of the National Adaptation Strategy

Achieving the goals and objectives of this Strategy will require whole-of-society action and coordination among governments. Geographically, Canada is the second biggest country in the world and is experiencing climate change in many different ways. Local and regional adaptation plans are in place in many parts of the country and are well placed to set priorities and advance action based on highest risks and local circumstances. At the national level, a series of action plans will be developed to better coordinate action and improve support for local actions – while respecting the jurisdiction and responsibilities of different orders of government and right holders.

Federal actions

The Government of Canada has developed an action plan, the Government of Canada Adaptation Action Plan, to outline the details of how the federal government is supporting the implementation of the Strategy. It outlines the federal role in advancing resilience and includes a comprehensive inventory of federal adaptation initiatives.

Updated regularly, and guided by this Strategy, the federal action plan will:

- Strengthen and streamline federal adaptation initiatives including key foundational actions such as climate change science and information;
- Make linkages with other commitments such as biodiversity conservation and climate change mitigation; and
- Mainstream adaptation considerations in broader policies and programming, including through strengthening of governance mechanisms within and between governments and sectors.

Provincial and Territorial actions

Provincial and territorial governments have jurisdiction over many areas critical for achieving our collective climate change resilience goals. They are responsible and set the direction for a wide range of climate change adaptation measures in their jurisdiction. Provinces and territories are at various states of climate change preparedness. Most have undertaken assessments of climate change risks, many advance adaptation through broader climate change strategies, and some have begun implementing dedicated adaptation action plans. See Annex B for additional information on climate change adaptation initiatives in each jurisdiction.

Increasing climate change resilience for all people living in Canada requires governments to align policies and programming. This will enable scaled up efforts, ensure adaptation measures are delivered efficiently, and make effective use of public funding. The Strategy aims to transform the way governments in Canada work together to increase climate change resilience.

Federal-Provincial-Territorial cooperation

In order to respect and respond to local circumstances, differing climate risks faced in each region, and different levels of readiness in each province and territory, federal-provincial and federal-territorial action plans will be developed. This approach will support regional implementation of the

Strategy and reflect the different risks and states of adaptation advancement in each province and territory. This approach will facilitate coordination, cooperation, and exchange of best practices between different orders of government. Bilateral action plans will support the goals and objectives of the Strategy and provincial and territorial governments' climate change adaptation priorities.

Indigenous-led action

First Nations, Inuit and Métis are already leading in Canada's efforts to adapt to the impacts of climate change and are developing climate-change strategies and actions to set out a long-term vision for adaptation in their communities and regions. These include national-, regional-, and community-level strategies and initiatives that reflect the diverse circumstances and priorities of Indigenous Peoples across the country. Adaptation actions in Indigenous communities and territories are more effective, meaningful, and durable when they are designed, delivered, and determined by and for Indigenous Peoples. For an illustrative list of Indigenous climate change strategies and actions, see Annex C.

For First Nations, Inuit, and Métis, climate change adaptation must be premised on the right to self-determination and should support Indigenous Peoples in leading adaptation action in and on their lands, territories, ice, and waters. To achieve this, the Government of Canada will work in partnership with First Nations, Inuit, and Métis to advance an Indigenous Climate Leadership Agenda, which will be the main pathway for implementing Indigenous communities' adaptation priorities. Over the next two years (2023-24 to 2024-25), the Government of Canada will work with First Nations, Inuit, and Métis on a regional and distinctions basis to chart a long-term approach to partnership on climate change and adaptation. This approach will support the progressive transition of the

resources and authorities necessary for Indigenous governments, communities and representative organizations to implement self-determined climate actions.

Monitoring our progress

Monitoring and evaluation is an important step to document progress in implementation, support transparency, and enable better decision-making in adapting to climate change. The Strategy's monitoring and evaluation framework aims to establish a consistent mechanism to regularly review and evaluate progress on the Strategy, and to understand which adaptation actions are working and where adjustments to plans and priorities should be made. Over time, consistent monitoring and evaluation will ensure that future versions of the Strategy and action plans build on achievements and lessons learned.

Regular reporting on indicators at the national level can track national adaptation progress and build a better understanding of resilience in Canada. It will provide information on where collective efforts are yielding results and where more work is needed. Since climate change impacts are broad, from the economy and infrastructure to human health and the environment, the framework represents data and information from across sectors to capture a more complete picture of adaptation progress.

The first framework has an initial set of indicators (see Annex D) that the federal government will continue to refine and expand with partners. This set of indicators is aligned with the Strategy's priorities and has been developed from available sources of quantitative information through ongoing coordination with partners and key stakeholders. Efforts to develop the monitoring and evaluation framework will continue as the Strategy evolves and as new indicators, partnerships, and data collection methods, including qualitative and other ways of knowing, are explored.

Looking forward

Canada's National Adaptation Strategy: Building Resilient Communities and a Strong Economy is the first Canada-wide adaptation strategy, aiming to better prepare the country and to set the path for greater resilience to climate change. Setting a common purpose will help people in Canada work better together to take coordinated, ambitious actions to prepare for climate change.

With a regular cycle for updates and consistent monitoring and evaluation, the Strategy is designed to be iterative and will be regularly updated as the climate continues to change and we undertake more actions to prepare and adjust. Regular progress reports will support transparency.

We all have a role in keeping ourselves, our families and our communities safe as the climate changes and we are confronted by increasing threats. We need to better understand how climate change will affect our health and our livelihoods. We need to make informed decisions in our communities and businesses to manage climate change risks. We can set standards to ensure buildings and infrastructure across the country can withstand climate change impacts. We can make plans to reduce disruptions and loss from climate change-related disasters that we cannot avoid.

We can only meet the magnitude of the challenge if we all work together. With climate justice at the heart of our shared goals, which encompasses the pursuit of environmental justice more broadly, the Strategy can help people in Canada thrive in the face of climate change.

Annex A: Roles and responsibilities

We are all part of the solution

While various groups have different roles and responsibilities for climate change adaptation, we are all part of the solution. Addressing the scale and complexity of our new climate reality will require shared commitment, aligned action and an understanding of where we each fit into the solution. The Strategy offers the opportunity to scale up ongoing actions and advance new initiatives and leadership through the help of shared priorities and collaborative action.

What are our roles and responsibilities and what can we do?

The **federal government** makes key contributions to adaptation action by demonstrating leadership, supporting foundational science and information, building knowledge and capacity, convening partners to coordinate action, and investing in adaptation solutions. Examples include:

- Making policy and regulatory decisions on national and international issues
- Creating federal laws and regulations
- Creating incentives to support the national economy
- Establishing climate-informed national codes and standards
- Supporting emergency mitigation, preparedness, and response and recovery from natural disasters
- Providing funding for programs, projects and partnerships to support action.
- Providing weather monitoring and forecasting, scientific research and analysis, and climate change information and advice
- Advancing Nation-to-Nation relationships with First Nations, Inuit and Métis

Illustrative actions: Federal programming

The federal government has accelerated its programs and spending on climate adaptation in the past years, including:

- Climate-resilient infrastructure: The *Disaster Mitigation and Adaptation Fund* supports communities better prepare for, and withstand, the potential impacts of natural disasters, including climate-driven extreme events such as flooding, wildfires, drought and permafrost thaw, to prevent infrastructure failures and protect Canadians and their livelihoods.
- Climate services: The *Canadian Centre for Climate Services* (CCCS) provides Canadians, across regions and sectors, with locally relevant data, information, training, tools and support to integrate climate change into decision-making. For example, the CCCS supports Climate Data Canada, a collaborative climate information portal that enables people across Canada to access, visualize and analyze climate data.

Provincial governments have important and unique roles to play on adaptation in their jurisdictions, particularly in relation to property and civil rights. As a result, provincial and territorial governments are able to advance adaptation in areas such as:

- Developing land-use planning laws and building regulations
- Leading on health care systems, and natural resource and land management, including permitting and regulation
- Making investments in resilient infrastructure
- Funding, delivering and designing emergency services, environmental protection, health, education, planning, economic development and transport
- Collecting data and information and conducting science at local and regional scales that can be used to better understand climate change

risks

Territorial governments share the same areas of responsibility as their provincial counterparts as outlined above; however, the specific challenges in the North influence their capacity to implement the full range of adaptation policies and programming under their jurisdiction. The limited role of the private sector, higher costs for goods and services, challenges with staffing and retaining expertise, and relative remoteness of many communities in the territories, among other factors, may prevent scale-up of adaptation solutions. Territorial governments also serve as the primary funder for municipal budgets, putting pressures on meeting other responsibilities such as education and health care, as well as slowing down the systemic response needed to prepare for climate change. The complex governance systems, including responsibilities and relationships between Indigenous governments, communities, and territorial governments influence the development and implementation of adaptation measures. The federal government holds additional responsibilities in provision of financial, technical, and human resource capacity to address complex crises such as climate change in the territories.

Illustrative Action: Cross-governmental collaboration

Flood Hazard Identification and Mapping: Federal, provincial and territorial partnership to complete flood hazard maps of high risk areas in Canada and make the information available to all people in Canada.

See Annex B for a list of provincial and territorial governments' climate change adaptation strategies and action plans.

Indigenous Peoples and governing bodies are key partners in adaptation action, who hold rights to lands and territories, and are advancing self-determined or self-governed actions as keepers of their territories and communities. They are leaders, who hold deep knowledge of natural systems and millennia of experience acting as stewards of the environment. Some of the ways First Nations, Inuit and Métis are advancing adaptation action include:

- Developing and advancing climate risk assessments and adaptation plans with actions for their regions and communities
- Applying knowledge and information about the environment and climate change through environmental stewardship, disaster risk reduction, land use plans, resource management and emergency management

Illustrative Action: Knowledge sharing and collaboration:

The Indigenous Centre for Cumulative Effects (ICCE) is an Indigenous-led organization and a network for Indigenous communities to access information, resources and best practices about cumulative effects. The main objective of ICCE is to build the technical and scientific capacity of Indigenous communities to address cumulative effects of climate change, development and other activities affecting Indigenous lands, waters and peoples based on the values, perspectives and priorities of First Nations, Inuit and Métis communities across Canada.

Local and regional governments have been at the forefront of climate adaptation, providing a lens into local circumstance and directly involving local communities in adaptation efforts. Municipalities and regional governments are integrating adaptation considerations into the decision-making process including:

- Land-use planning and zoning
- Water supply and wastewater management
- Flood and wildfire risk management

Illustrative Action: Health equity and climate change

The **City of Montreal** has a new collaboration agreement with the regional public health department (*Direction régionale de santé publique*), to facilitate a more upstream approach to issues related to health equity and climate change. The agreement allows the City to better evaluate and anticipate possible impacts of climate change on the health of the Montreal population and the resulting social and equity issues, as well as to map the urban sectors that are more vulnerable to heat waves and other climate hazards.

The private sector is directly experiencing the current impacts of climate change and related future uncertainties. Many economic sectors in Canada are beginning to:

- Assess, address, and report on climate vulnerabilities in their operations, supply chains, and workforce
- Make direct investments to develop innovative technical, financial and operational solutions that increase climate resilience and support

adaptation action across the economy
- Increase the number of private-public partnerships to fund innovative projects

Illustrative Action: Peer learning

Agriclimate, an initiative by Quebec farmers starting in 2017, equips agricultural producers, experts and stakeholders for climate change mitigation and adaptation. Agriclimate has supported development of 10 regional climate adaptation plans in Quebec, as well as established a network of nearly 40 pilot farms since fall of 2021, which will test and document farm climate resiliency measures along with their economic impact.

Electricity Canada, the national forum and voice of the evolving and innovative electricity business in Canada, developed climate adaptation planning guidelines for electricity companies in Canada. The guidelines are recommended processes for utilities to follow when creating tailored company-specific adaptation plans. Given the diverse geography and structure of the electricity sector in Canada, a series of workshops were also delivered across the country to work hands-on with utilities in interpreting and applying the proposed guidelines.

Professional Associations create communities of practice, set standards of excellence and promote professional development amongst professionals within a given field. Due to their leadership positions within specific areas of work, they are well placed to influence climate adaptation action and help support integration of adaptation into the professional activities of their memberships. These include:

- Developing climate resilience guidelines for their members
- Integrating climate change considerations into their codes of conduct and ethics
- Establishing best practices related to climate change adaptation
- Building awareness of climate risks and offering adaptation training and education to their members
- Integrating adaptation competencies into their education and professional development requirements
- Providing up-to-date information on new technologies and approaches to reduce climate risks
- Encouraging the uptake of new practices, designs and technologies through guidance documents to foster industry innovation
- Regulating requirements for special designations

Illustrative Action: Professional training and guidelines

The Canadian Association of Physicians for the Environment's Climate Change Toolkit for Health Professionals has eight modules that can each be used as tools for health professionals and students in health care and public health sectors to engage more directly on climate change with their patients, and to prepare for climate change in their workplaces and communities.

Illustrative Action: Raising education and public awareness

Dairy Farmers of Canada, the national policy, advocacy and promotional organization representing Canadian dairy producers, developed the proAction program, a national quality assurance program for the Canadian dairy sector that includes a requirement for all dairy farmers in Canada to complete an Environmental Farm Plan (EFP). These plans help farmers assess their on-farm risks and map out a plan to manage and mitigate those risks (e.g., nutrient management, soil health, water management and biodiversity). As of 2017, over 40% of farms in Canada have an EFP in place, with support from federal, provincial and territorial governments that incentivize adoption of on-farm beneficial management practices.

Academic institutions, researchers, scientists, and non-governmental organizations play a key role in generating and sharing knowledge on climate change adaptation and helping to mobilize adaptation action, including:

- Incorporating adaptation in the curriculum for professional programs
- Including adaptation as an eligible specialty for co-op programs and internships
- Convening and leveraging research networks nationally and internationally
- Undertaking climate adaptation research including in innovative solutions and adaptive management
- Raising awareness of climate change and adaptation
- Working with governments and other partners to understand, assess and mobilize knowledge about climate impacts and develop new technology and innovative solutions
- Elevating Indigenous knowledge in a way that respects the traditions of Indigenous knowledge transfer

Illustrative Action: Data, research and knowledge mobilization

The Prairie Climate Centre (PCC) at the University of Winnipeg brings an evidence-based perspective to communicating the science, impacts and risks of climate change through high-quality maps, documentary videos, research reports and plain-language training, writing, and outreach. The PCC's goal is to inspire citizen participation, to support communities in making meaningful and effective adaptation and mitigation decisions for current and future generations, and to help Canadian society move from risk to resilience. The flagship project of the PCC is the Climate Atlas of Canada.

Illustrative Action: Raising education and public awareness

For example, the **University of British Columbia's** Faculty of Forestry's Climate Vulnerability and Adaptation is offering "a flexible 8-week online program that provides forest professionals with an understanding of climate science, vulnerability assessments, adaptation development, and how it is applied to management and business case adaptation".

Regional climate service organizations play a key role in providing Canadians with the information and support to consider climate change in their decisions and thus, reduce their vulnerability and increase resilience to climate change impacts. A partnership-based approach between the federal government (CCCS), provinces, territories, and climate services experts, the climate service organizations are a key example of using a collaborative approach to ensure adaptation actions are locally relevant and grounded in the most up-to-date climate data and knowledge. Although there are regional gaps in the north that need to be addressed, the following organizations have been established:

- Pacific Climate Impacts Consortium, serving the Pacific and Yukon region
- ClimateWest, serving the prairie region
- Ouranos, serving Quebec
- CLIMAtlantic, serving the Atlantic region

Communities and individuals directly and indirectly experience the impacts of climate change, and can take action to adapt to climate change in ways such as:

- Educating themselves on climate change impacts and adaptation solutions
- Integrating adaptation in their decisions to protect their health, safety and assets at the individual, household, family or community level
- Acting on their right to express and continue to advocate for their values and preferences for how adaptation is implemented in their communities and across the country

Illustrative Actions:

While some adaptation measures can be implemented through policy processes (e.g., codes, standards, by-laws), some will require individual action and broader support (e.g., re-zoning flood plains, wildfire resilient homes including using FireSmart Canada programming for homes and communities, and household measures to reduce the effects of storms and flooding). Individuals can also play an important role in preparing for the impacts of climate change, and showcasing measures which can lead to supporting greater uptake of adaptation measures in their communities and neighbourhoods.

Getting to know your neighbours and volunteering for elderly support networks, homeless shelters, resident associations and neighbourhood community groups is an excellent way to contribute. For example, the Toronto St James Town Community Co-op aims to ensure marginalized communities in Toronto's downtown core have a "safe response plan for future pandemics, extreme weather, black outs and other global and community crises". They have a climate and emergency resilience program for residents to cool down during extreme heat waves and have access to food during emergencies.

Individuals and homeowners can also act to improve the resilience of their own lives by preparing for the impacts of climate change by:

- Preparing and storing an emergency kit in a safe place in their home (e.g., food, water, flashlights/candles, batteries, battery charger for cell phones, cash, etc.).
- Investing in low impact development technologies (e.g., permeable pavement, rainwater gardens, sand bags, trees) and installing sump pumps and backwater valves in basements to

reduce the impacts of flooding of a home (e.g., homeowners can better understand how to protect homes from flooding through the Home Flood Protection Check Up).

- Understanding the risks of building or living in areas with a high flood risk and understanding your options to reduce the impacts of erosion, sea-level rise, or storm surges on your property.
- Individuals can also play an important role in the **gathering of data to monitor and report** on climate events by volunteering and contributing to science and monitoring through various citizen-science databases (e.g., Abeilles citoyennes, Agroclimate Impact Reporter, Coastie Program, BC Parks iNaturalist Project).

Annex B: Climate change adaptation in provinces and territories

Provincial and territorial governments in Canada are responsible for and set the direction for climate change adaptation measures in their respective jurisdictions. Provincial and territorial governments hold jurisdiction over property and civil rights, where land-use planning laws, building regulations, natural resource management, health care policy and public infrastructure decisions play a key role in advancing and streamlining climate change adaptation. In addition, provinces and territories directly deliver and design programming in key areas for climate adaptation, including emergency services, environmental protection, health, education, economic development and transportation. They collect data and information and conduct science at local and regional scales that can be used to better understand climate change risks.

To find the latest information and reports on provincial and territorial climate change adaptation initiatives, please consult each jurisdiction's respective website (see table below). In addition, national summaries for the latest state of adaptation measures are available through a number of reports, including Canada's National Communications report to the United Nations' Framework Convention on Climate Change.

Climate change impacts and vulnerabilities vary from region to region. The Canada in a Changing Climate: Regional Perspectives Report report provides a regional perspective on the impacts of climate change across the country. Provincial and territorial governments also conduct climate risk and vulnerability assessments, where unique and local circumstances inform efforts to create resilient communities, environment and economy. See table below for additional information on regional climate risks.

North

For a regional perspective on how climate change is impacting communities, environment and economy in the North, see Canada in a Changing Climate: Regional Perspectives Report.

Yukon

For the latest state of action in the Territory, please see the Government of Yukon's website.

Northwest Territories

For the latest state of action in the Territory, please see the Government of Northwest Territories' website.

Nunavut

For the latest state of action in the Territory, please see the Government of Nunavut's website.

British Columbia

For a regional perspective on how climate change is impacting communities, environment and economy in British Columbia, see Canada in a Changing Climate: Regional Perspectives Report.

For the latest state of action in the Province, please see the Government of British Columbia's website.

Prairie provinces

For a regional perspective on how climate change is impacting communities, environment and economy in the Prairie Provinces, see Canada in a Changing Climate: Regional Perspectives Report.

Alberta

For the latest state of action in the Province, please see the Government of Alberta's website.

Saskatchewan

For the latest state of action in the Province, please see the Government of Saskatchewan's website.

Manitoba

For the latest state of action in the Province, please see the Government of Manitoba's website.

Ontario

For a regional perspective on how climate change is impacting communities, environment and economy in Ontario, see Canada in a Changing Climate: Regional Perspectives Report.

For the latest state of action in the Province, please see the Government of Ontario's website.

Quebec

For a regional perspective on how climate change is impacting communities, environment and economy in Quebec, see Canada in a Changing Climate: Regional Perspectives Report.

For the latest state of action in the Province, please see the Government of Quebec's website.

Atlantic provinces

For a regional perspective on how climate change is impacting communities, environment and economy in the Atlantic Provinces, see Canada in a Changing Climate: Regional Perspectives Report.

New Brunswick

For the latest state of action in the Province, please see the Government of New Brunswick's website.

Nova Scotia

For the latest state of action in the Province, please see the Government of Nova Scotia's website.

Prince Edward Island

For the latest state of action in the Province, please see the Government of Prince Edward Island's website.

Newfoundland and Labrador

For the latest state of action in the Province, please see the Government of Newfoundland and Labrador's website.

Annex C: Indigenous climate change strategies and adaptation action

First Nations, Inuit and Métis are leaders and drivers of climate action. They are addressing climate change in ways that reflect their distinct nationhood, cultures and Knowledge. Many Indigenous organizations, regions, and communities are advancing efforts to monitor, assess, and understand climate change impacts and to develop climate change strategies and action plans to address the unique needs of their communities and natural environments.

Below is an incomprehensive list that provides great examples of the breadth and diversity of climate change adaptation strategies, plans, and actions being led and developed by and for First Nations, Inuit, and Métis.

First Nations:

- Assembly of First Nations National Climate Strategy (expected in 2023)

- BC First Nations Climate Strategy and Action Plan (2022)
- Assembly of First Nations National Climate Gathering Report (2020)
- Poplar River First Nation Fire Vulnerability Assessment (2018)
- Yukon First Nation Reconnection Vision
- Indigenous Climate Hub

Inuit:

- National Inuit Climate Change Strategy (2019)
- Inuvialuit Settlement Region Climate Change Strategy (2022)
- Nunavut Tunngavik Incorporated Climate Change Strategy (expected in 2023)
- Nunavik Climate Change Adaptation Strategy (expected in 2023)
- Nunatsiavut Regional Climate Change Strategy (expected in 2023)
- Community Climate Change Manual by the Aqqiumavvik Society in Arviat
- SmartICE program

Métis Nation:

- Métis Nation's National Climate Change Strategy (Métis National Council – expected fall 2023)
- Métis Nation Climate Change and Health Vulnerability Assessment (Métis National Council, 2020)
- Lifestyle as Medicine: The Way We Have Always Lived – Métis Climate Resilience Gathering Summary Report (Métis Nation British Columbia, 2022)
- Métis Nation of Alberta's Climate Action Plan (2017)
- Métis Nation - Saskatchewan Community-Based Climate Monitoring Program
- Métis Nation of Ontario Climate Change Forum Reports
- Métis Environmental Leaders of Tomorrow program (Manitoba Métis Foundation)

Annex D: Monitoring and evaluation

Monitoring and evaluation (M&E) is a critical part of the adaptation process, providing the information necessary to learn what is working and adjust the course of action. The National Adaptation Strategy M&E framework tracks Canada's adaptation progress. The framework will be refined and improved on an ongoing basis to develop a better understanding of the state of resilience across the country. The NAS M&E framework provides a national-level view of adaptation that is neither exhaustive nor exclusive of other monitoring systems in various regions and sectors.

Adaptation indicators

Table 1 includes an initial set of select indicators to track process on adaptation across Canada. As the Strategy is implemented, the federal government, in partnership with other orders of governments, Indigenous Peoples, and experts will build on this initial set of indicators over time. This could include addition of new metrics and more-representative sources of data as our understanding of the pressures, drivers, and state of adaptation in Canada improves. To view the latest set of indicators in more detail, as well as other aspects of the Monitoring and Evaluation Framework, please visit the main National Adaptation Strategy webpage.

Table 1. First set of indicators for the National Adaptation Strategy

Indicator	Systems	Relevance to Adaptation

Indicator	Systems	Relevance to Adaptation
Percentage of households with cooling systems	Health and Well-being	As extreme-heat events increase, access to reliable cooling systems will help people withstand the worst effects of these events in their own homes.
Percentage of households with park or green space close to home	Health and Well-being, Nature and Biodiversity	In temperate, urbanized regions of Canada, ready access to green spaces promotes physical and mental health and well-being through fitness, recreation, and natural cooling.
Changes in land use, such as from forests to croplands and settlements	Nature and Biodiversity	Natural uses of land, such as forests, reduce the severity of some climate-related impacts.
Percentage of tree canopy cover in urban areas (urban greenness)	Nature and Biodiversity	Trees in cities, where the majority of people in Canada live, reduce the impact of extremes in temperature and precipitation, which are expected to worsen as the climate changes.

Indicator	Systems	Relevance to Adaptation
Proportion of terrestrial and marine area conserved	Nature and Biodiversity	Conserved areas help to maintain ecosystem services that, in turn, reduce the impacts of climate change on quality of life.
Status of key fish stocks	Nature and Biodiversity, Economy and Workers	As climate change continues to affect the temperature and chemistry of Canada's oceans, sustainable fisheries and continued opportunities to harvest fish hinges on the status of key fish stocks.
Crop data: ratio of harvested acreage to planted acreage	Economy and Workers	As climate change continues to affect Canada's agricultural regions, crop data will contribute to a better understanding of the resilience of crop production systems and the impacts of climate change including extreme weather events (droughts and floods) and increased prevalence of pests and diseases.

Indicator	Systems	Relevance to Adaptation
Total direct payments to agriculture producers under business risk management programs for protection against income and production losses	Economy and Workers	The provision of supports to agricultural producers will help them to recover from losses, including those driven by climate change.
Percentage of natural resource businesses and professionals reporting they have capacity to apply climate change adaptation tools and information for adaptation decision-making	Economy and Workers	Businesses will need to adapt to the realities of a changing climate. Ensuring businesses and professionals have the skills and knowledge to incorporate adaptation tools and information into their operations and decision making will increase the resilience of Canada's economy.
End-to-end transit time of a select grouping of commodities, such as grains, departing from Canada to Asia	Economy and Workers	Adaptation measures can support the resilience and reliability of Canada's supply chain, of which end-to-end transit time is a measure.

Indicator	Systems	Relevance to Adaptation
Number of long-term drinking water advisories for public systems on reserve*	Infrastructure	Sustainable delivery of drinking water through public systems on reserves will be more resilient to disruptions, including those caused by climate change.
Percentage of public and municipal organizations that factored climate change adaptation into decision-making processes for infrastructure	Infrastructure	Factoring adaptation into decision-making processes for municipal infrastructure assets is a first step in the process of ensuring their resilience to climate change.
Percentage of people in Canada with strong sense of belonging to local community	Foundational	A strong sense of belonging leads to resilience against shocks and disruptions, including those related to climate change.

Note: * indicates that this represents a structural need in underserved and historically excluded populations, where progress would enhance capacity to adequately prepare for climate change.

The following principles were used to develop and continue to inform updates to the framework:

Informed decision-making. The framework will track progress in implementation of the Strategy, as well as support broader learning objectives. Results will support evidence-based decision-making regarding

adaptation actions and future iterations of the Strategy.

Data diversity. Process and output indicators will be used to monitor the implementation of the Strategy actions. Outcome indicators will help measure changes in resilience at the national level. While quantitative indicators allow for consistent comparisons of data, qualitative metrics, such as case studies, will also be presented for a more holistic picture of on-the-ground climate change impacts and adaptation.

Equity and inclusiveness. Climate change does not impact everyone equally. Disaggregating indicators by equity factors can highlight gaps and contribute to informed decisions that support all people in Canada. In addition, the framework presents opportunities to highlight Indigenous climate leadership and knowledge systems, while recognizing Indigenous data sovereignty.

Efficient resources. Relevant existing data will be used. This will enable the rapid deployment of indicators, avoid duplicative efforts, and help align the framework with other national priority areas. New and improved data-collection methods will be explored and integrated to fill knowledge gaps.

Meaningful indicators. Not all available data are relevant or applicable. Prospective indicators for the framework will be evaluated according to their relevance to the Strategy, accessibility, ease of interpretation, and data accuracy.

Iterative approach. Effective monitoring and evaluation of adaptation at the national level will require flexibility and ongoing improvement. Indicators will be updated as relevant, new data becomes available. Results will be published as part of the Strategy reporting process, and, in turn, will inform the development of future strategies and objectives.

Annex E: Glossary of terms

Adaptation: In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.[1]

Adaptive capacity: The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.[2]

Country foods: Indigenous people in Canada continue to eat traditional diets obtained from hunting, fishing and gathering. These traditional diets are also referred to as country food. The further north one travels in Canada, the more likely the majority of an Indigenous community's diet consists of country foods.

Climate change: A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use.[1]

Climate justice: Born from the concept of environmental justice, climate justice involves "advancing climate solutions that link human rights and development in a human-centered approach, placing the needs, voices and leadership of those who are most impacted at the forefront".

Co-benefits: The positive effects that a policy or measure aimed at one objective might have on other objectives, thereby increasing the total benefits for society or the environment. Co-benefits are often subject to

uncertainty and depend on local circumstances and implementation practices, among other factors. Co-benefits are also referred to as ancillary benefits.[3]

Climate-related hazards: The potential occurrence of a [climatic] event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.[1]

Disaster: A 'serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts'[4]

Disaster risk reduction (DRR): Denotes both a policy goal or objective, and the strategic and instrumental measures employed for anticipating future disaster risk; reducing existing exposure, hazard or vulnerability; and improving resilience.[1]

Ecosystem services: Ecological processes or functions having monetary or non-monetary value to individuals or society at large. These are frequently classified as (1) supporting services such as productivity or biodiversity maintenance, (2) provisioning services such as food or fibre, (3) regulating services such as climate regulation or carbon sequestration and (4) cultural services such as tourism or spiritual and aesthetic appreciation.[1]

Emergency management: The prevention and mitigation of, preparedness for, response to and recovery from emergencies.[6]

Environmental justice: Environmental injustice reflects the procedural and geographic discrimination of Indigenous, Black, Racialized, religious, low-income, 2SLGBTQI+, women, and other marginalized communities such as the very young, older adults, or people who experience structural inequity,

poverty, or isolation; placing said communities in close proximity to environmental hazards, often resulting in direct health impacts. These same communities are also under-represented in environmental decision-making spaces.

Evidence-based health adaptation measures: Measures that have been reviewed in the scientific literature and have been shown to be effective in protecting health.

Exposure: The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected.[1]

Natural infrastructure: The interconnected set of natural and constructed ecological systems, green spaces and other landscape features. It includes planted and indigenous trees, wetlands, parks, green open spaces and original grassland and woodlands, as well as possible building and street-level design interventions that incorporate vegetation. Green infrastructure provides services and functions in the same way as conventional infrastructure.[7]

Governance: Governance refers to all processes of governing, the institutions, processes and practices through which issues of common concern are decided upon and regulated.

Grey infrastructure: Engineered physical components and networks of pipes, wires, roads and tracks that underpin energy, transport, communications (including digital), built form, water and sanitation, and solid-waste management systems.[1]

Hazard: A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.[6]

Health region: Health regions are legislated administrative areas defined by provincial ministries of health. These administrative areas represent geographic areas of responsibility for hospital boards or regional health authorities. Health regions, being provincial administrative areas, are subject to change. For complete Canadian coverage, each of the northern territories also represents a health region.[14]

Health system: Individuals, organizations, groups, communities, all orders of government, Indigenous health organizations and others who contribute to improving the health and well-being of populations make up Canada's complex health system. This includes, for example, Indigenous health organizations, local/municipal health authorities, provincial and territorial ministries of health, national and provincial/territorial health organizations and institutions, federal agencies and departments whose responsibility is the management of risks that may impact population health or funding research, health and allied health professionals and associations, healthcare and public health service providers, nongovernmental organizations and community-based organizations, universities, laboratories, and research institutions, media, private sector and industry partners.

Impacts (of climate change): The consequences of realized risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather/climate events), exposure, and vulnerability. Impacts generally refer to effects on lives, livelihoods, health and well-being, ecosystems and species, economic, social and cultural assets, services (including ecosystem services) and infrastructure. Impacts may be referred to as consequences or outcomes, and can be adverse or beneficial.[1]

Infrastructure: Includes new and existing assets, as well as grey infrastructure, hybrid, and natural infrastructure. Infrastructure systems: Sets of built and nature-based infrastructure assets that together deliver key services, and which share vulnerabilities and interdependencies, within and across the built environment, natural systems such as ecosystems and watersheds, jurisdictions, and transboundary territories. Infrastructure services: Includes the provision and support for health care, utilities, water and wastewater, telecommunications, emergency services, trade and transportation routes, and power (among others).

Indigenous Peoples: The term Indigenous Peoples refers to First Nations, Inuit and Métis peoples, as well as other off-reserve and individual Indigenous Peoples living in Canada. The need to employ a distinctions-based approach that takes into account Indigenous rights, unique and distinct voices and strengths, knowledge systems, governance structures, experiences, traditional values, needs and priorities is recongnized[8]. Indigenous Peoples can include people at all levels, for example, at the national, regional, or local levels, the private sector, communities, and individuals.

Mainstreaming (adaptation): to address climate change within development planning, sectoral decision-making and regular budgeting processes, rather than as stand-alone measures or a separate sector. This is meant to provide for a more efficient use of resources and improved sustainability of investments in the context of a changing environment.[9]

Maladaptation: Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is usually an unintended consequence.[1]

Marginalized communities: Defined as certain social groups that experience significant structural and collective barriers to participating in society that compound and prevent them from sharing benefits, opportunities, access to resources, voice, and/or respect for rights, which impacts social equity and social cohesion. This could include attitudinal, economic, environmental, historic, and/or social barriers based on age, sex, ethnicity, disability, economic status, family status, race, sexual orientation, and gender identity or expression.

(Disaster) Mitigation: Sustained actions taken to eliminate or reduce risks and impacts posed by hazards well before an emergency or disaster occurs; mitigation activities may be included as part of prevention. Measures may be structural (e.g., flood dikes) or non-structural (e.g., land use zoning and building codes).[10]

(Climate change) Mitigation: A human intervention to reduce emissions or enhance the sinks of greenhouse gases.[1]

Nature-based solutions: 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.[11]

Northern Canada: Yukon, Northwest Territories, Nunavut, Nunavik (Quebec), and Nunatsiavut (Newfoundland and Labrador), as well as the northern regions of British Columbia, Alberta, Saskatchewan, Manitoba, and Ontario.

(Emergency) Preparedness: A phase of emergency management consisting in making decisions and taking measures before an emergency, in order to be ready to effectively respond and recover.[10]

(Disaster) Prevention: Actions taken to avoid the occurrence of negative consequences associated with a given threat; prevention activities may be included as part of mitigation.[10]

(Climate) Resilience: The capacity of social, economic, and environmental systems to cope with a hazardous event, trend, or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while maintaining the capacity for adaptation, learning, and transformation.[7]

Risk: In the context of climate change, risks can arise from potential impacts of climate change as well as human responses to climate change. Relevant adverse consequences include those on lives, livelihoods, health and well-being, economic, social and cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species.[1]

Social determinants of health: Many factors influence health. In addition to our individual genetics and lifestyle choices, where we are born, grow, live, work and our age also have an important influence on our health. Social determinants of health refer to a specific group of social and economic factors within the broader determinants of health—the broad range of personal, social, economic, cultural and environmental factors that determine individual and population health—that relate to an individual's place in society, such as income, education or employment. Experiences of discrimination, racism and historical trauma are important social determinants of health for certain groups such as Indigenous, Black, Racialized, religious, low-income, 2SLGBTQI+, women, and other marginalized communities such as the very young, older adults, or people who experience structural inequity, poverty, or isolation.[12]

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.[1]

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1 Under Water: The Costs of Climate Change for Canada's Infrastructure

2 Damage Control: Reducing the costs of climate impacts in Canada

3 Due North: Facing the costs of climate change for northern infrastructure

4 Canada in a Changing Climate, Regional Perspectives: Northern Canada

5 Damage Control: Reducing the costs of climate impacts in Canada

6 Estimating the benefits of Climate Resilient Building and Core Public Infrastructure

7 World Health Organization, 1948

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