

Department of Sustainable Development

Nunavut Climate Change Strategy



October 2003

Nunavut

Climate Change Strategy

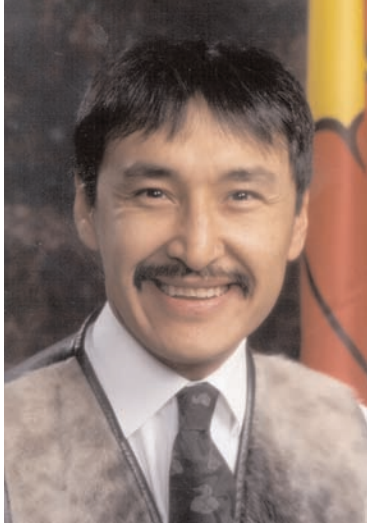


Front Cover Photo by Jack Hicks

NUNAVUT CLIMATE CHANGE STRATEGY

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Paul Okalik
Premier



Olayuk Akesuk
Minister, Sustainable Development



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MESSAGE FROM THE PREMIER, THE MINISTER OF SUSTAINABLE DEVELOPMENT AND THE MINISTER OF ENERGY

Since the Kyoto Protocol was negotiated in 1997, jurisdictions around the world and in Canada have been developing strategies to address the environment and economic challenge of climate change. We recognize Nunavut's responsibility to contribute to this initiative in order to support Canada's position as a leader among nations in protecting the global environment. As such, the Government of Nunavut supports global and local actions to reduce the impacts of future climate change, including reducing emissions of the greenhouse gases believed to cause enhanced climate change.

We have first-hand knowledge of environmental conditions and are now witnessing the impacts to the environment because of climate change. These changes are making it increasingly difficult to travel and access our resources. It is possible that our environment, and the land and wildlife resources we depend on, and the current social and economic systems could be further influenced by the predicted change.

In recognition of the serious consequences and impacts that climate change may have on all Nunavummiut, its land, wildlife and the environment, the Government of Nunavut initiated the necessary work to develop a Nunavut Climate Change Strategy. On behalf of the Government of Nunavut, we are pleased to present a strategy with broad goals and objectives that will enable us to work together with all Nunavummiut, Governments and stakeholders to take action on climate change.

We would like to extend our sincere appreciation and thanks to all Nunavummiut, the Government of Canada and to all those organizations that participated and committed their time and resources to the development of the strategy.

Paul Okalik

Olayuk Akesuk

Edward Picco



1. CLIMATE CHANGE IN NUNAVUT

Although climate change is a natural process, human activities are causing the Earth's climate to change quicker and more dramatically than at any time in our history. Changes to climate will have a greater impact on the Arctic environment than other areas of the world.

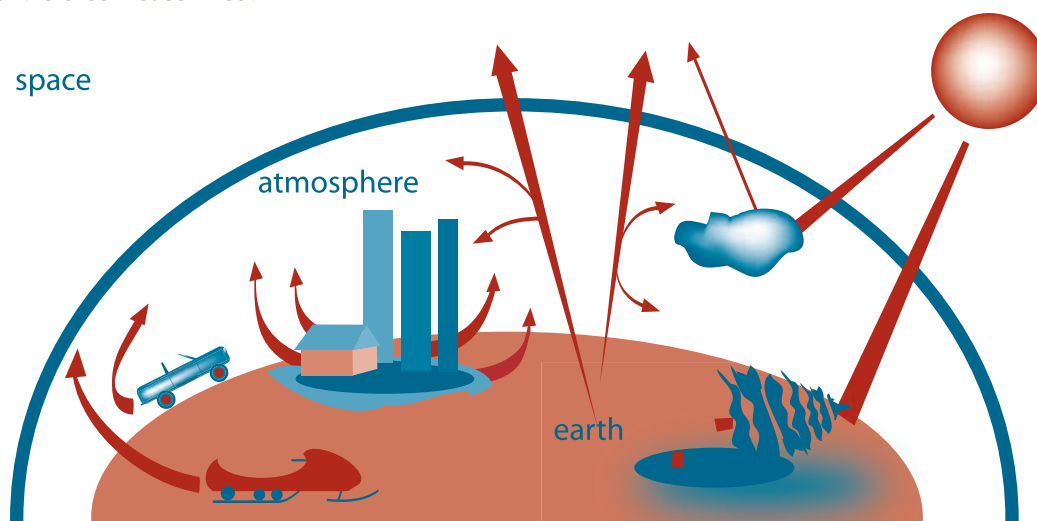
1.1 Climate and the Greenhouse Effect

The weather we experience every day is caused by the interaction of the sun, the ocean, land and the atmosphere (layers of air and gas above the Earth). The typical weather conditions of an area, either seasonally or yearly, are referred to as climate. The atmosphere plays an important role in the type of weather and climate we experience.

Greenhouse Gases (GHG)

GHG are naturally occurring gases in the Earth's atmosphere that trap some of the sun's heat and prevent it from escaping into space, thereby keeping the Earth's temperature at an average of 15 °C. GHG include water vapour, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC's), perfluorocarbons (PFC's) and sulphur hexafluoride (SF₆). Three of these gases (CO₂, CH₄ and N₂O) are of particular concern because they are closely associated with human activities. These activities have upset the natural balance of GHG that has existed in our atmosphere for thousands of years. CO₂ is the most significant GHG released by human activity, and the main contributor to climate change.

Illustration of the Greenhouse Effect





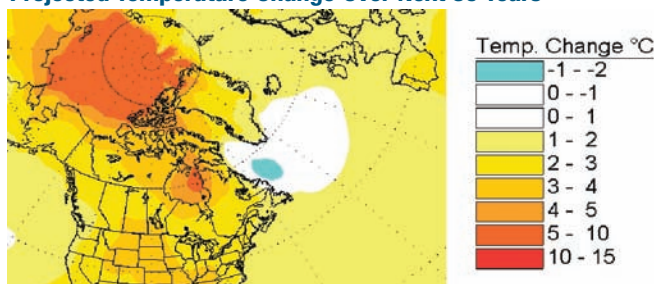
Some of the heat from the sun is trapped in the atmosphere by gases referred to as greenhouse gases (GHG). These gases prevent heat from escaping into space - insulating the earth - keeping it and surrounding air warm. Without this natural “greenhouse effect”, the Earth would be much colder than it is and could not support life.

Greenhouse gases result from a variety of natural processes and before industrialization their concentration in the atmosphere was relatively constant. The burning of fossil fuels (for example gas, diesel and coal) has resulted in significant increases in the concentration of greenhouse gases, notably carbon dioxide, in the atmosphere. The increased GHG are enhancing the insulating effect and causing the Earth to get warmer.

Increasing concentrations of GHG in the atmosphere over the last 100 years have resulted in an increase of average global temperatures by approximately 0.5 degrees centigrade (°C); this increasing temperature is referred to as “global warming”. In some parts of Canada the rise in temperature over the last century has been approximately 1°C. Some predictions suggest that the Earth’s average temperature may increase by up to 3°C over the next 100 years. While these increases seem small, the Earth has never experienced this level of warming over such a short period of time.

Global warming will have an impact on the Earth’s climate that far exceeds a temperature change. Temperature is only one part of the climate system and a change in one part could lead to a series of reactions that disrupt weather patterns around the world. The term “global climate change” more clearly describes the situation the world is facing. Ecosystems, wildlife and humans are able to adapt to changes in climate that occur over long periods of time. However, with climate change occurring over decades instead of centuries or millennia, the ability of ecosystems to adapt is challenged.

Projected Temperature Change Over Next 50 Years





1.2 Climate Change in Nunavut

Researchers believe that, in the northern regions of the world, the effects of climate change are already being seen. Ice in the Arctic is estimated to have thinned by nearly 40% in the last 30 years. Serious impact on animals dependent on cold climates - such as polar bears and high Arctic caribou - are predicted as changing weather patterns disrupt their habitat and activities. Potential impacts of global climate change in Nunavut¹ may be as follows:

- General increases in temperatures (by 5 °C to 7°C in the next 100 years) with shorter winters, more rain and more extreme weather;
- Disappearance of over one-half of existing permafrost;
- Flooding of low-lying coastal areas as a result of the rising sea levels;
- Loss of glaciers and possibly all permanent sea ice;
- Introduction of new diseases; and
- Loss of wildlife, fish and plant species and the introduction of new species.



These are just a few words of Nunavummiut witnessing and experiencing the changes in our climate:

“Things have changed so much it is hard to rely on what you knew traditionally anymore. What happened years ago is different than what it is today.”

Baker Lake

“Most of the areas that we use for our travel are not as useable...due to the lacks of snow, they are not really navigable. It has really affected some of the hunters as the lack of snow is hindering the harvesting”.

Iqaluit

“...while weather is more uncertain and unpredictable these days, hila will continue to change and so people will have to go along with the weather....People will adapt, but this will not be easy for the Inuit who have long depended on their observations of the weather to survive”.

Kugluktuk



2.0 INTERNATIONAL AND NATIONAL ACTION ON CLIMATE CHANGE

Around the world, people have recognized that global climate change is one of the most serious environmental issues facing the planet. For over 10 years countries have been taking action to understand the causes and potential impacts of climate change. International agreements to reduce the accumulation of greenhouse gases in the atmosphere have also been initiated:

- At the 1992 Earth Summit in Rio de Janeiro over 180 countries adopted the United Nations Framework Convention on Climate Change (UNFCCC) to achieve stabilization of greenhouse gas concentrations in the atmosphere to prevent dangerous impacts to our climate system.
- In 1997, the same countries initialed the Kyoto Protocol, which included a commitment from Canada to reduce its greenhouse gas emissions to a level 6% below its 1990 levels by the year 2013.
- Canada's plans to address climate change included the development and implementation of a strategy that sought the broad support of provincial and territorial governments and industry. The National Implementation Strategy was completed in the Fall of 2000. Under this strategy, Canada's federal, provincial and territorial governments agreed to develop their own action plans to respond to climate change.

- In November 2002, the federal government released its Climate Change Plan for Canada and in December 2002 the federal government announced the Canadian ratification of the Kyoto Protocol.

The National Climate Change Strategy Process

In 1997 federal, provincial and territorial first ministers directed their energy and environment ministers to examine the impacts, costs and benefits of implementing the Kyoto Protocol, as well as options for addressing climate change. The National Process was established and began with analysis of the implications for meeting the Kyoto target. In 2000, a coordinated national approach to climate change was advanced including: the National Implementation Strategy and the First National Business Plan. The strategy provides a framework for a Canadian response that addresses both emission reduction and adaptation to the effects of climate change. The First National Business Plan includes measures that will be undertaken to implement the strategy.



3.0 CHALLENGES AND NEED FOR A CLIMATE CHANGE STRATEGY FOR NUNAVUT

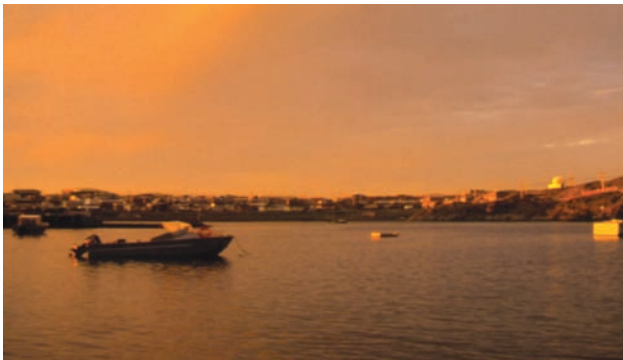
3.1 Challenges

The pressing need for economic development, dependence on imported fossil fuels and high rate of population growth are all factors that will affect Nunavut's ability to control its greenhouse gas emissions.

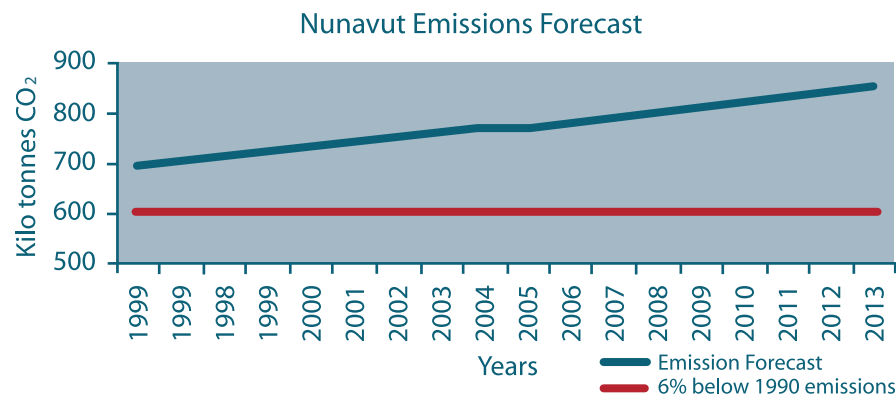
In 2001, Nunavut's total GHG emissions are forecast to be 743 kilo-tonnes (kt). Based on current forecasts of population growth and economic activity, Nunavut's emissions are increasing rapidly and it is predicted that by 2013, our emissions could be 23% higher than the 1990 levels. Emissions may be significantly higher if mining projects are developed. Therefore, reducing emissions will have significant short term negative impacts on Nunavut's economic growth unless we change our current practices.

While Nunavut is likely to experience significant impacts resulting from climate change, its GHG emissions represent only about 0.1% (one tenth of one percent) of Canada's emissions, which accounts for approximately 2% of the world's total emissions.

Despite Nunavut's small contribution, the amount of GHG emissions produced per person (i.e. the per-capita emissions) is among the highest rates in the world. At approximately 27.4 tonnes annually,² our per capita emissions exceed the Canadian average of 20.6 tonnes per year and greatly exceeds the average of 13.6 tonnes of the 35 industrialized countries that have pledged emission reductions under the Kyoto Protocol.



8 ² See "Nunavut Energy and Environmental Issues - Background Paper", December 2000



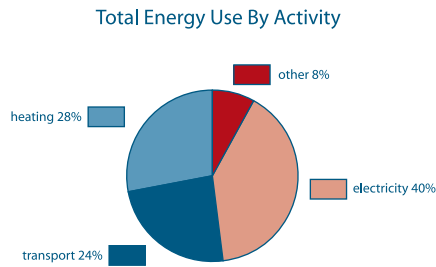
Comparison of Per-Capita GHG Emissions by Country or Region

Country or Region	1995 Annual Emissions (kilotonnes CO ₂)	Population (1995)	Per Capita Emissions (tonnes CO ₂)
Nunavut*	696	25,358	27.4
NWT*	1,090	39,636	27.5
Yukon**	730	30,887	23.6
Canada	61,000	29,620,000	20.6
Australia	482,000	18,070,000	26.7
United States	5,581,000	263,200,000	21.2
Greenland***	851	58,863	15.2
Denmark	78,100	5,230,000	14.9
Finland	56,200	5,110,000	11.0
Russian Federation	1,526,000	148,300,000	10.3
Iceland	2,650	270,000	9.8
Norway	38,100	4,360,000	8.7
Sweden	37,200	8,830,000	4.2

*1996 data

**Estimated using 1996 data from Statistics Canada and inventory of Yukon Greenhouse Emissions

***Emissions for Greenland were estimated from fuel consumption Statistic



In terms of energy use, the generation of electricity from all sources in Nunavut accounts for approximately 40% of the fuel consumed, followed by heating at 28% and transportation at 24%³. Other activities account for the remaining 8% of fuel consumed annually. It is estimated that the Government of Nunavut alone spends approximately \$121 million annually on energy and utility services representing almost 18% of the government's total budget.⁴

In terms of energy supply, Nunavut's current annual energy requirements are met through an estimated 260 million litres of imported refined petroleum products per year. In the north, there are opportunities to harness wind and solar resources; however, it is necessary to determine if these technologies can operate productively in Arctic conditions. Hydro and natural gas resources occur in Nunavut, but these resources are too far from the communities to be economically developed at this time. As a result, Nunavut is forced to depend on imported fossil fuels for all of its energy requirements.

Interest in energy efficiency may be lower in Nunavut than in other jurisdictions since energy costs are subsidized for many consumers either through public housing or employee subsidy programs. The immediate benefits of reduced energy costs by conservation are not recognized. This presents a challenge to increasing public awareness and encouraging action when actual energy and associated environmental costs are unknown to the general consumer.

Challenges to reducing GHG emissions and adapting to impacts

Cold climate

Long distances between small communities

Limited energy supply options

Cost of energy

Awareness of issue

Economic growth



³ See "Nunavut Energy and Environmental Issues - Background Paper", December 2000

⁴ See Ikuma II Report, March 2002



Increasing public awareness and concern for climate change among Nunavummiut is challenged by the immediacy of other significant issues such as health care, education and employment. Implementation of the strategy will compete with these issues for time and funding resources. Building awareness will require community and government leadership to demonstrate the priority of climate change.

There is need for a Nunavut Strategy to address climate change that will:

- Enable us to work towards sustainable economic development
- Protect the health and integrity of the natural environment; and
- Efficiently meet the needs of Nunavummiut for energy and development

The consequences of climate change are not all negative if the change occurs slowly and we have the opportunity to adapt. Some of the possible benefits to Nunavummiut are lower heating costs in winter, longer shipping season and longer growing seasons in the south resulting in lower prices in our grocery stores. Climate change may also present major opportunities to expand into new areas of environmental technology and services, increase exports, and create jobs.

In summary, Nunavut's dependence on petroleum products, limited energy supply alternatives, need for economic development, and its high population growth rate present significant challenges to reducing GHG emissions. Reducing emissions may require Nunavut residents to undertake substantially more aggressive measures

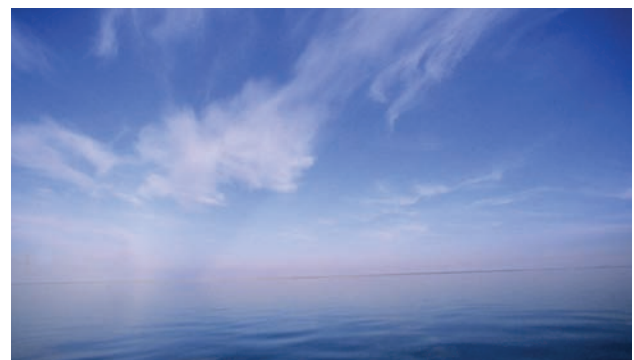
than other Canadians, at a time when this new territory needs new economic opportunities to meet the needs of its growing population.

3.2 The Need for a Climate Change Strategy for Nunavut

The potential and current impacts of climate change to the environment and to Nunavummiut's traditional activities and lifestyle have compelled the Government of Nunavut to support global and local actions to reduce greenhouse gas emissions and prepare for adaptation.

The strategy will allow us to work towards sustainability so that we are able to provide similar opportunities for future generations. It will be necessary to ensure that actions within the Government of Nunavut continue to be coordinated with national actions and programs in order to ensure that goals of the north are equally considered.

The implementation of the strategy will establish Nunavut as a leader in responding to climate change for the Canadian Arctic through the use of *Inuit Qaujimaqatuqangit* (Inuit knowledge) and scientific research.





4.0 CLIMATE CHANGE STRATEGY FOR NUNAVUT

4.1 Introduction

The Climate Change Strategy and associated business plans are intended to guide Nunavut's response to climate change and assist Canada in meeting its commitment to greenhouse gas emissions reduction in the Kyoto Accord. The strategy is intended to set the broad direction for action on climate change and business plans will contain the specific actions to be implemented to meet the goals and objectives of the strategy. In October 2000, the Minister of Sustainable Development announced that the Government of Nunavut is committed to developing a Climate Change Strategy for Nunavut.

4.2 Government of Nunavut Commitment

The Government of Nunavut supports Canada's commitment to reducing greenhouse gas emissions in a manner that minimizes the negative impact to our health, environment, wildlife and other natural resources, and economy. As stated by the Premier in September 2002:

"We have first-hand knowledge of environmental conditions and are now witnessing the impacts to the environment because of climate change. These changes are making it increasingly difficult to travel and access our resources."

"The Kyoto Accord is a vital step in dealing with climate change...[this Protocol] is the only international instrument currently proposed that begins to deal with these important issues on this scale."

Nunavut's commitment to climate change was reaffirmed in June 2002, when the Government of Nunavut stated that Nunavut is committed to the Kyoto Protocol.

- The Department of Sustainable Development has the mandate within the Government of Nunavut to monitor the impacts of climate change on the Nunavut environment, and the development of strategies or material(s), which identify, report on, or illustrate the impacts of climate change on Nunavut and Nunavummiut.
- The Qulliq Energy Corporation has the mandate for addressing energy use, energy conservation, and alternative energy development in Nunavut, and any related projects, particularly with a capital component.



In October 2002, the Premier announced the creation of the Qulliq Energy Corporation and the first Minister of Energy for the Government of Nunavut. The re-organization of energy (electrical power and fuel) supply and distribution will be in place April 2004 and represents a major commitment by the Government of Nunavut toward energy use and management in Nunavut.

Nunavut is committed to reducing greenhouse gas emissions and being part of the solution to meeting the Canadian targets under the Kyoto Protocol. The Government of Nunavut believes that climate change issues can only be addressed through cooperation and collaborative action. It is only through cooperative planning that the benefits of reducing GHG emissions be realized and the impacts of climate change on Nunavut minimized.



4.3 Goals and Objectives

The goals of the Nunavut Climate Change Strategy over the next ten years to the year 2013 are to:

- Control and reduce greenhouse gas emissions;
- Identify and monitor climate change impacts; and
- Develop adaptation strategies.

The objectives of the Nunavut Climate Change Strategy are:

- To engage Nunavummiut including government, non-government, industry and the public in discussions surrounding climate change and greenhouse gases.
- To advance our knowledge of climate change impacts and adaptation strategies in Nunavut through *Inuit Qaujimajatuqangit* and scientific research.
- To build partnerships at the community, regional, national and circumpolar levels that will share knowledge on emission reduction strategies and climate change impacts and adaptation.
- To increase awareness and understanding in Nunavut on the issue of global climate change and the need to control greenhouse gas emissions.



- To encourage Nunavummiut including government, non-government, industry and the public to take action to control greenhouse gas emissions through energy management and alternative energy supply technology.
- To identify and implement achievable and practical actions for both the short and long term that will result in future sustained reductions in greenhouse gas emissions in Nunavut, taking into consideration the economic, environmental and social costs and benefits.
- To identify economic opportunities that may arise from the use of more efficient equipment and cleaner technology.
- To identify potential sources of funding that may be utilized to implement the actions identified.

4.4 Guiding Principles

The strategy will be guided by the following principles:

Pijitsirniq - The Government of Nunavut will demonstrate leadership by diligently and responsibly taking action to control emissions of greenhouse gases and responding to climate change. This leadership serves all Nunavummiut and is based on knowledge and ability.

Aajiqatigiingniq - Individuals, communities and industry will be provided a meaningful opportunity to share ideas and participate in decision-making for initiatives that will directly affect them.

Piliriqatigiingniq - Ensures a wise use of resources in Nunavut through sharing and collaborative relationships based on the balanced application of Inuit qaujimajatuqangit and scientific research.





Pillimmaksaniq - Community involvement and implementation of initiatives enhances self-reliance, empowerment and capacity.

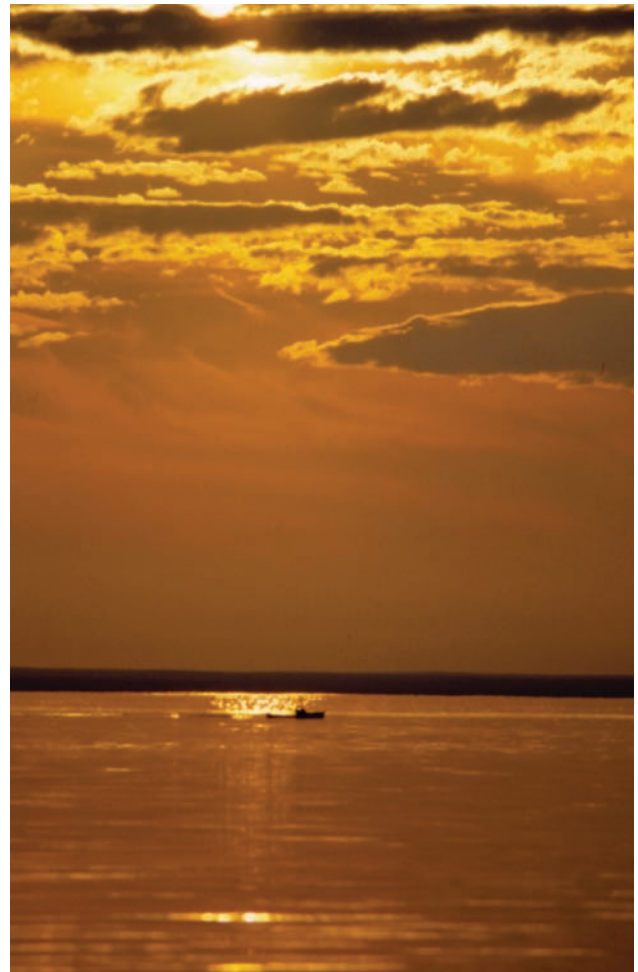
Comprehensive Approach - The responsibility for meeting the goals and objectives of the strategy must be shared by all sectors of society, including governments, the private sector and the general public. It is through this principle that Nunavut supports Canada in meeting its commitment to emission reduction through international agreements.

Phased Approach - The strategy will adopt a long-term, responsible approach addressing impacts of climate change and to achieving sustained greenhouse gas emission reductions ensuring that negative impacts to Nunavummiut health and the environment is minimized.

Balanced Approach - Controlling emissions must be done in ways that carefully consider Nunavut's developing economy by minimizing the negative impacts to the economy and, where possible, identify economic opportunities.

Effective Mitigation - Action should advance the environmental, economic and social goals of residents of Nunavut, ensuring that Nunavut's response to control greenhouse gas emissions supports the overall priorities of the Government of Nunavut.

Precautionary Approach - Given the uncertainty of the impacts of climate change and the significant risk that the potential effects of climate change poses for human and environmental health, a "weight of evidence" or precautionary approach will be used to justify preventative actions rather than wait for full scientific certainty.





5.0 BUSINESS PLANS AND ACTIONS

Actions in Nunavut, to reduce the emissions of greenhouse gases and address the impacts of climate change, will be developed by considering community and sectoral concerns and the socio-economic interests of all Nunavummiut. Actions will build upon and coordinate with existing legislation, policies and initiatives of the Government of Nunavut and will be in accordance with our obligations under the Nunavut Land Claims Agreement.

The specific actions to be taken to achieve the goals and objectives of this strategy will be contained in business plans and should be organized under five themes. The themes are:

Enhance awareness and understanding

Public awareness and education are essential if Nunavummiut are to understand what climate change means to them and to encourage everyone to take action.

Government leading by example

The government can be a positive example by demonstrating the range of existing, and new, options to reduce emissions.

Encouraging action across sectors

Promoting action on climate change in non-government sectors of the economy.

Promoting technology development and innovation

Developing new energy supply options to reduce annual fuel imports.

Investing in knowledge and building a foundation

Focuses on improving data, broadening observations, developing networks and enhancing Nunavut's scientific capacity.





5.1 Developing and Updating Business Plans

The Nunavut Climate Change Strategy outlines the goals and objectives upon which business plans will be based. The business plans will need to be developed and updated every three to five years to reflect changes in technology, priorities and funding. Public consultations are an important component in developing business plans for the strategy.

Development and implementation of future business plans must take into consideration any changes in both the national and international context as well as the priorities of the Government of Nunavut through its stated priorities and policy initiatives and implementation of the Nunavut Land Claims Agreement.

5.2 Roles and Responsibilities

In June 2002, the Government of Nunavut specified roles within the government to address climate change and energy issues.

- The Department of Sustainable Development has the mandate to monitor the impacts of climate change on the Nunavut environment, and the development of strategies or material(s), which identify, report on, or illustrate the impacts of climate change on Nunavut and Nunavummiut.
- IKUMA, PWS - Petroleum Products Division and the Qulliq Energy Corporation have the mandate for addressing energy use, energy conversion, and alternative energy development in Nunavut, and any related projects.

The mechanism to oversee implementation of the Nunavut Climate Change Strategy and associated business plans is a Deputy Ministers Steering Committee (DMSC). Membership will include but not be limited to Deputy Heads from





Sustainable Development, Executive and Intergovernmental Affairs, Public Works and Services, Nunavut Housing, and Qulliq Energy Corporation, with the Deputy Head of EIA as chair. This committee will be responsible for:

- The implementation, monitoring and performance evaluation of the actions.
- Preparation of annual reports, work plans and budget.
- Preparation of and update business plans.



5.3 Monitoring and Reporting

Implementation of actions described in business plans will require the commitment of all Nunavummiut to be successful. The business plans will include monitoring and reporting that are necessary to evaluate progress against the strategy's goals and objectives with a commitment to report to the stakeholders and the general public. The business plans will be reviewed and updated every three to five years to reflect new information, changes in technology, priorities and funding, and ensure a continuing commitment to the goals and objectives of the strategy.

The Deputy Ministers Steering Committee will determine the requirements for reporting business plan implementation on an annual basis. The process should also include a formal review every three to five years to evaluate the progress of implementing the strategy and reporting to the public through the Legislative Assembly.





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APPENDIX– Climate Change Glossary

Adaptation

The process by which an organism or species becomes adjusted to its environment. In the context of climate change, adaptation refers to the adjustments inhabitants of the earth would need to make in the face of irreversible changes. These adjustments would be made primarily at the local climate level. If mitigation measures were able to reduce the scale of change or extend the length of time over which it occurs, adaptation would be much easier.

Alternative Energy

Energy derived from non-fossil fuel sources.

Atmosphere

The envelope of air surrounding the Earth. Most weather events are confined to the troposphere, the lower 10 km of the atmosphere.

Carbon Dioxide (CO₂)

Recognized as the principal contributor to increasing atmospheric levels of greenhouse gases and therefore to global warming (see greenhouse gases). Society's use of energy is the largest factor in this carbon dioxide generation. Carbon dioxide is produced by burning fossil fuels such as coal, oil and natural gas. It is removed from the atmosphere through ocean absorption and through photosynthesis by growing plants.

CFCs (Chlorofluorocarbons)

Gaseous, synthetic substances composed of chlorine, fluorine, and carbon. They have been used as refrigerants, as aerosol propellants, as cleaning solvents, and in the manufacture of plastic foam. CFCs are suspected of causing ozone depletion in the upper atmosphere.

Climate

The synthesis of day-to-day weather variations in a locality. The climate of a specified area is represented by the statistical collection of its weather conditions during a specified interval of time. It usually includes the following weather elements: temperature, precipitation, humidity, sunshine, and wind velocity.

Climate Change

Refers to changes in the climate as a whole, not just one single element of the weather. Global climate change, therefore, refers to changes in all the interconnected weather elements of the Earth.

Climate Controls

Fairly permanent factors that shape the nature of climate in a locality. They include solar radiation, atmospheric circulation, topography, distribution of land and water, and land use (e.g., urban, rural, and forest).

Cogeneration

The use of waste heat from electricity generation, such as exhaust from gas turbines, for either industrial purposes or heating nearby buildings.

Ecosystem

An integrated and stable association of living and non-living resources functioning within a defined physical location.

Enhanced greenhouse effect:

Humans are contributing significant amounts of heat-trapping gases to the atmosphere through the use of fossil fuels. The increased concentrations of these gases are enhancing the natural greenhouse effect. It is the “enhanced greenhouse effect” that is expected to cause a large and rapid rise in average global temperatures.

Fossil Fuels

Coal, petroleum, and natural gas are called fossil fuels because they are made of fossilized, carbon-rich plant and animal remains. These remains were buried in sediments and compressed over geologic time, slowly being converted to fuel. Fossil fuels can be extracted from the sediment by humans million of years after its deposition and its stored energy can be used as fuel when it is burned.

Global Warming

Strictly speaking, global warming and global cooling refer to the natural warming and cooling trends that the Earth has experienced all through its history. However, the term “global warming” has become popularized as the term that encompasses all aspects of the potential climate changes that will be brought about by an increase in global temperatures.

Greenhouse Effect

A warming of the Earth's atmosphere caused by the presence in the atmosphere of certain heat-trapping gases (e.g., water vapour, carbon dioxide, methane). These gases absorb heat radiation emitted by the Earth, thereby retarding the loss of energy from the system to space. The greenhouse effect has been a property of Earth's atmosphere for millions of years and is responsible for maintaining the Earth's surface at a temperature that makes it habitable for human beings (see enhanced greenhouse effect).

Greenhouse Gases (GHGs)

Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆) and hydrofluorocarbons (HFCs). These gases together absorb the earth's radiation and warm the atmosphere. Some greenhouse gases occur naturally but are also produced by human activities, particularly the burning of fossil fuels. They are usually measured in carbon dioxide equivalents. The United Nations says the GHGs mostly responsible for causing climate change are carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).

Inuit Qaujimagatuqangit

Inuit knowledge pertaining to language, culture, values and beliefs, survival skills, use of resources, humane and sustainable harvesting and understanding of society, ecology and environment.

kilotonne (kt):

Metric measure of 1000 tonnes (1 tonne equals 2204 pounds).

kilowatt (kW):

Power of 1000 watts, approximately 1.34 h.p.

kilowatt hour (kWh):

Amount of energy equal to operating one kilowatt for one hour.

Lifecycle Cost:

A product's life cycle is made up of the activities that go into making, using, transporting and disposing of the product with each activity having an associated cost.

Methane (CH₄)

Methane is one of the three major greenhouse gases responsible for climate change (see greenhouse gases). Although there is less methane than carbon dioxide in the atmosphere, methane is a more effective heat-trapping greenhouse gas. An estimate of the global warming potential of methane is 21 times that of carbon dioxide. Methane comes from the decay of matter without the presence of oxygen. Human activities such as rice cultivation, the rearing of some farm animals, biomass burning, coal mining and natural gas venting are increasing the input of methane into the atmosphere.

Mitigation

The term used to cover measures that seek to avoid, reduce or delay global warming by reducing those emissions of atmospheric gases that are of human origin or within human control.

Monitoring

The process of checking, observing, or keeping track of something for a specified period of time or at specified intervals.

Nitrous Oxide (N₂O)

Nitrous oxide is one of the three major greenhouse gases responsible for climate change (see greenhouse gases). Soils and oceans are the primary natural sources of nitrous oxide. Humans contribute to nitrous oxide emissions through soil cultivation and the use of nitrogen fertilizers, nylon production and the burning of organic material and fossil fuels. Combustion and biomass burning are sources of nitrous oxide emissions. Agricultural practices may stimulate emissions of nitrous oxide from soils and play a major role in the build-up of nitrous oxide in the atmosphere.

Non-renewable resources:

For the purposes of this document, non-renewable resources refers to natural resources that are not naturally replenished once they have been harvested. Non-renewable resources can be used up completely or else used up to such a degree that it is economically impractical to obtain any more of them. Fossil fuels are examples.

Ozone (O₃)

Is gas created naturally and also by reactions in the atmosphere involving gases resulting from human activities, including NO_x or nitrogen oxides, from motor vehicles and power plants.

Renewable resources:

Natural resources that have the capacity to be naturally replenished despite being harvested (e.g., forests, fish, wind, solar). The supply of natural resources can, in theory, never be exhausted, usually because it is continuously produced.

Residual/Waste Heat

Energy lost as heat in the exhaust gases and water jackets of diesel-electric generators.

Sink

Any process, activity or mechanism that removes, and stores, greenhouse gases from the atmosphere. Forests and agricultural soils that absorb and store CO₂ are known as "carbon sinks" under the Kyoto Protocol.

Solar Radiation

The total solar radiation coming from the sun and all of the sky. It includes the direct beam from the unclouded sun as well as the diffuse radiation arriving indirectly as scattered or reflected sunlight from the sky and clouds.

Source

Any process or activity that releases a greenhouse gas or a precursor to the atmosphere.

Weather

State or condition of the atmosphere with respect to heat or cold, wetness or dryness, calm or storm, and clearness or cloudiness for a certain period of time.

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