

## **FREQUENTLY ASKED QUESTIONS AND ANSWERS ON CLIMATE CHANGE AND ENERGY EFFICIENCY**

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## SECTION 1: CLIMATE CHANGE

### **1) What is climate change and why is it important?**

- The science is clear: climate change is one of the most serious long-term challenges facing the planet and our province today.
- Life on Earth is sustained by naturally occurring gases in the Earth's atmosphere which allow the Sun's rays to pass through the atmosphere to warm the Earth and then trap the warmth to prevent it escaping out into space. These gases retain enough heat from the Sun to sustain life on Earth.
- But human activity has disrupted that balance. Since the industrial revolution, we have put greenhouse gases (such as carbon dioxide, methane and nitrous oxide) into the atmosphere in massive amounts by burning fossil fuels (oil, gas and coal), cutting down a lot of forests, and using farming methods that add to GHGs in the atmosphere.
- Now there is too much of these GHGs in the atmosphere. All the gases act like a blanket surrounding the Earth retaining too much of the Sun's heat. That means we are fundamentally changing the Earth's climate. Global average temperature has risen by 0.85C since 1880 and some regions have warmed by much more than this. The Northern Hemisphere is warmer now than at any point in the last 1000 years.
- In 2014, Intergovernmental Panel on Climate Change (IPCC) released its latest report on the science of climate change. The IPCC was established in 1988 by the World Meteorological Office and the United Nations Environment Programme. It is the most comprehensive and authoritative source of information on climate change, releasing comprehensive assessments on the state of climate change every five to seven years. The report concluded that:
  - The probability that human activities are the main cause of climate change has increased from 'very likely' (90 per cent chance) to 'extremely likely' (95 per cent certain).
  - Global temperatures have already increased by 0.85°C since 1880 and temperatures are likely to rise between 0.3°C to 4.8°C by the late 21<sup>st</sup> Century.
  - Sea levels are likely to rise by between 26cm and 82cm by the late 21<sup>st</sup> Century, after a 19cm rise in the 19<sup>th</sup> Century.

- Year-round reductions in Arctic sea ice are projected by the end of the 21st century. A nearly ice-free Arctic Ocean in September is possible by mid-century.
- The scientific consensus agrees that climate change is happening and there is over 95% probability it is due to the release of GHGs from human activity.

## **2) What are the impacts of climate change on NL?**

- Climate change will make Newfoundland and Labrador warmer, wetter, and stormier. For example:
  - Temperatures could rise by as much 4 degrees Celsius in northern Labrador in winter by mid-century.
  - Precipitation will become more intense, occur more frequently and last longer. In St. John's precipitation is projected to increase by 28% by 2050.
  - Climate change is expected to cause more frequent and more severe extreme weather events. Hurricane Igor alone caused \$185 million of damage. Hurricane Sandy caused billions of damage in the US and the loss of 150 lives.
- These changes will pose both opportunities and risks to Newfoundland and Labrador such as:
  - Longer growing seasons for agriculture, forestry and aquaculture.
  - An extended summer tourism season.
  - Opportunities for growth in the green economy such as new demand ocean observation technologies.
  - Climate change is causing glaciers to melt, sea-levels to rise, and more coastal erosion. As over 90% of our population lives by the coast, this is a serious threat.
  - Extreme weather events damage households, businesses and infrastructure, and put lives at risk. Extreme weather often causes floods, one of the most common and costly natural hazards for our province.
  - Climate change is impacting winter-ice conditions in Labrador, adversely affecting winter transportation routes and affecting the permafrost on which buildings are constructed, threatening structural integrity. It is also impacting traditional habitats for caribou herds which are already under distress.
  - Climate change is affecting ecosystems which can affect livelihoods and health. It is changing the ocean environment, which is impacting species and bringing new pests and diseases northwards like cabbage worm and Lyme disease.

### **3) NL emits little compared to bigger provinces. Why should we do anything to reduce GHG emissions?**

- As a global problem, climate change calls for a global response. All jurisdictions, no matter how big or small, have a role to play. As Canada pursues GHG emission reductions nationally, all provinces will be expected to contribute.
- As the world moves towards a carbon-constrained economy, it is important to prepare for the future by determining how to minimize the risks and seize the opportunities, such as the growing demand for clean power generated from non-GHG emitting sources like wind and hydroelectricity.

### **4) Why does it make economic sense to take action on climate change?**

- Climate change is not just an environmental issue as it has significant economic and social consequences. There are strong economic imperatives to devise a clear path forward. The global cost of reducing GHG emissions is lower than the global costs associated with responding to the effects of climate change.
- Those jurisdictions that engage proactively in action on climate change will be best placed to position their economies to minimize risks and maximize opportunities, as they will shape the rules and help prepare their economies for the fundamental changes to come in a carbon-constrained world.
- Jurisdictions that fail to grapple with the agenda may incur higher costs in the long run, miss opportunities to seize new markets for low emitting goods and services, and could be vulnerable to changing market realities. Delays in taking action to reduce emissions can increase the final costs of meeting emission reduction targets by creating uncertainty for business and “locking in” less efficient capital stock.
- A study commissioned by CCEE and BTCRD concluded that, with the right support, it is possible to increase jobs in the green economy by 30% by 2020. Some sectors of the green economy also present the possibility of increases in high-paying, specialized employment and economic diversification. The green economy includes sectors such as sustainable tourism, green buildings, green energy supply, waste management, energy efficiency, green transportation and sustainable resources management (e.g. aquaculture, forestry and agriculture).

- Adaptation measures designed to improve resilience to the unavoidable impacts of climate change can help minimize the costs associated with these impacts.

## **5) What is the difference between climate change adaptation and climate change mitigation?**

- Responding to climate change is a complex challenge that has two equally important parts: adaptation and mitigation. Action is needed on both fronts simultaneously (they are complementary actions and one cannot be substituted for the other). A two-pronged approach is therefore needed with:
  - **Adaptation** - adjusting to the unavoidable impacts of climate change to improve resilience; and
  - **mitigation** - reducing GHG emissions to limit or avoid potential impacts of climate change in the future, and
- Climate change **adaptation** refers to actions by governments, communities, businesses and individuals to understand, plan for, and respond to unavoidable changes in the climate. This could include, for example, new planning practices to avoid areas at risk of sea-level rise, building infrastructure to higher standards and exploiting economic opportunities such as the growing demand for environmental and water monitoring.
- Adaptation is often considered more of a local issue compared to GHG reduction (mitigation) efforts as the specific climate change impacts, challenges and opportunities can be unique to a specific location. As a result, a fundamental component of adaptation is first improving understanding of the potential risks and opportunities.
- Climate change **mitigation** refers to the actions by governments, communities, businesses, and individuals to reduce the quantity of GHGs released into the atmosphere, in an effort to minimize continued future warming of the Earth. At the individual or organizational level, this is often known as reducing one's carbon footprint. The establishment of GHG reduction targets forms a key part of climate change mitigation policy for many governments.
- Actual reductions in GHG emissions can be achieved in many ways, including:
  - switching from energy sources powered by burning fossil fuels to energy sources powered by renewable (hydro, wind, solar, etc.) or nuclear sources;

- increasing the energy efficiency of equipment that burns fossil fuels; and,
- changing practices or behavior to reduce the consumption of fossil fuels – such as walking or using public transit instead of driving a gas-powered car.

## **6) Why must adaptation and mitigation proceed hand-in-hand?**

- Promoting action on adaptation is a long-term challenge and one that is fundamental to the sustainability of Newfoundland and Labrador.
- Because GHGs stay in the atmosphere for significant periods of time, the climate will continue to change even if global GHG emissions were reduced to zero today. The planet is already committed to a certain amount of warming and the continuation of some impacts that have already been seen.
- However, the *extent and severity of impacts* over the coming decades will be determined by the level of GHG emissions countries continue to emit going forward. Therefore, efforts to reduce GHG emissions must proceed hand-in-hand with efforts to adapt to a changing climate.

## **SECTION 2: ENERGY CONSERVATION AND EFFICIENCY**

### **7) What is energy efficiency? How does it differ from energy conservation?**

- Energy efficiency refers to achieving a similar or better level of service or output while using less energy. Energy efficiency can involve the use of new or existing technologies, such as insulation or a heat pump. For example, an energy efficient light bulb provides the same amount of light output with less energy input than a non-energy efficient bulb, and energy efficient windows and insulation can allow a home to be heated to the same level of comfort as a house without any insulation using less energy.
- In contrast to energy efficiency, energy conservation focuses on reducing energy consumption through changes in behaviour, such as turning off lights when leaving a room or unplugging chargers when not in use.

## **8) How are energy efficiency and conservation connected to climate change?**

- Energy efficiency can be an important component to combating climate change where the energy being consumed comes from fossil fuels as less energy consumption means less GHG emissions. Reduced energy consumption of “clean” energy has no impact on GHG emissions.
- Energy conservation and efficiency actions that help tackle climate change include those that reduce reliance on energy generated through the combustion of fossil fuels such as coal, oil, and natural gas to generate heat and electricity and to fuel vehicles.

## **9) Do energy efficiency and conservation have other benefits beyond climate change?**

- Absolutely. Energy conservation and efficiency present an opportunity for economic development and environmental progress in NL.
- Regardless of the impact on GHG emissions, energy conservation and efficiency has significant economic and other benefits, including:
  - ***Lower household energy bills*** – For example, energy efficiency retrofits under the Residential Energy Efficiency Program lowered household bills by, on average, \$720 per annum;
  - ***Improve business competitiveness*** - By lowering energy costs, businesses can lower production costs.
  - ***Improve the comfort of people’s homes*** which can have significant health benefits, as the likelihood of ill health is increased by cold homes, with illnesses such as influenza, heart disease and strokes all exacerbated by the cold.
  - ***Lower operating costs for schools and hospitals*** – For example, the new K-6 School in Paradise was built to high energy efficiency standards and, relative to a building constructed to traditional standards, it is expected to reduce annual energy use by 61.8% and annual energy costs by 59.6% (over \$100,000 per annum).

- ***Reduce local air pollutants*** – Energy efficiency can reduce the amount of local air pollutants emitted. These pollutants, which include fine particulate matter and other chemicals, can be harmful to human health and are distinct from GHG emissions which are the principle cause of climate change.
- ***Contribute to job creation and economic growth*** - Modeling by the Department of Finance shows that, for every \$1 million spent on energy efficiency programming, GDP increases by about \$0.8 million in year one and about \$1.1 million over the long term, and consumer spending increases by \$0.6 million in year one and \$0.7 million over the long term.
- As a result, even if all the province's energy was generated from clean energy sources, there would still be a strong economic rationale for promoting greater energy efficiency.