

# Building a Stronger Response to Climate Change



Environment and Local Government  
July 5, 2016



# Building a Stronger Response to Climate Change



The Challenge



Goals and Guiding Principles



The Context for New Brunswick's Response

# Building a Stronger Response to Climate Change



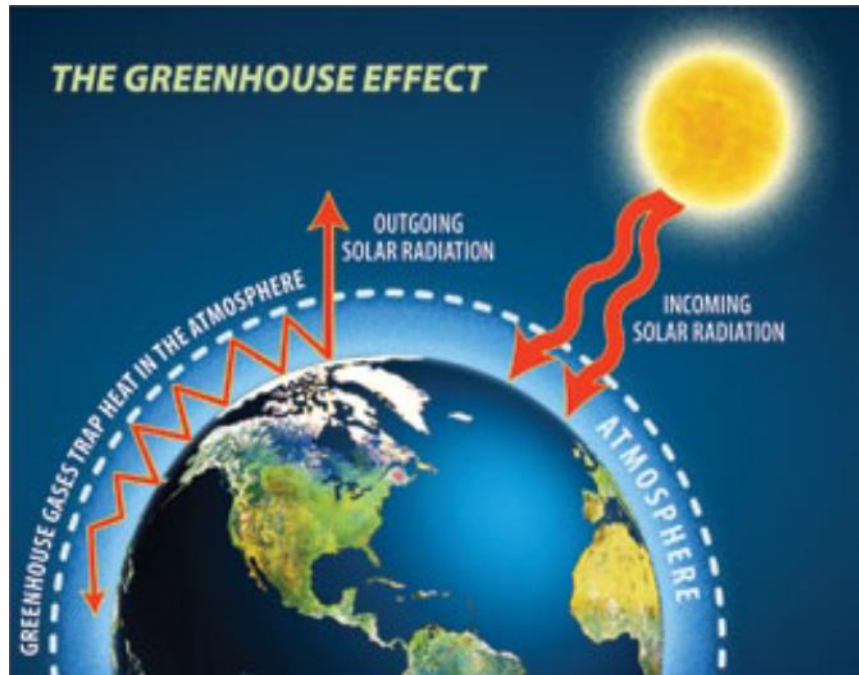
Potential Actions



Some Questions to Consider

# The Challenge

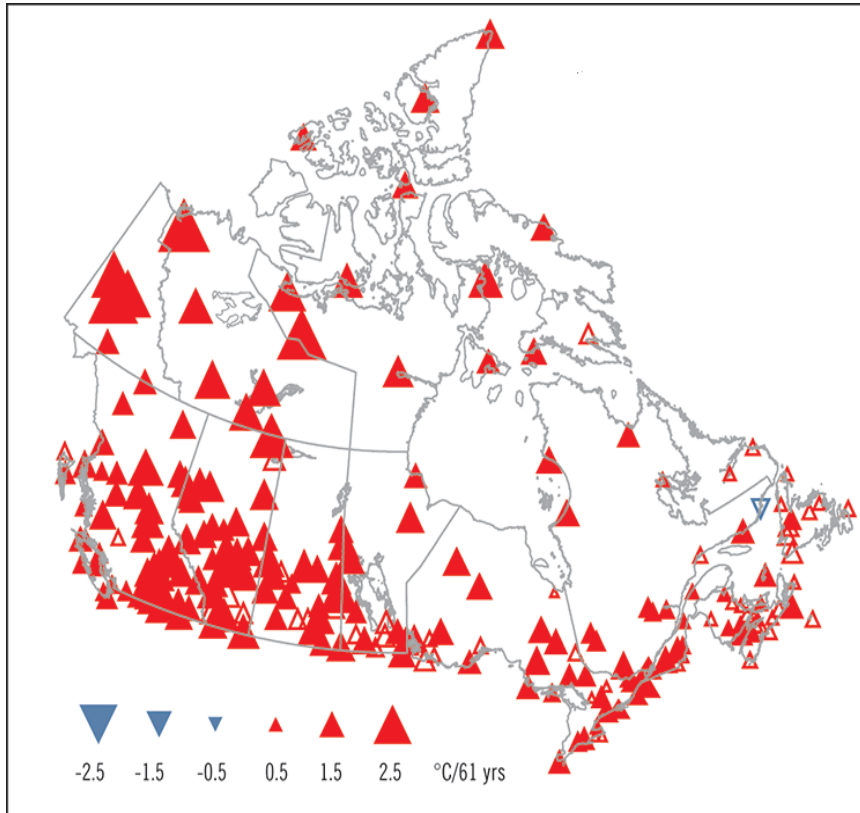
## Global Climate Change



- Humans have increased the amount of greenhouse gases (GHGs) in the atmosphere.
- Fossil fuels account for about 95% of human-generated GHGs (carbon dioxide, methane, nitrous oxides, etc.)
- Global GHG emissions are projected to increase average temperatures by 2 °C or more by 2100.
- Irreversible and catastrophic impacts will occur if no action is taken.

# The Challenge cont'd

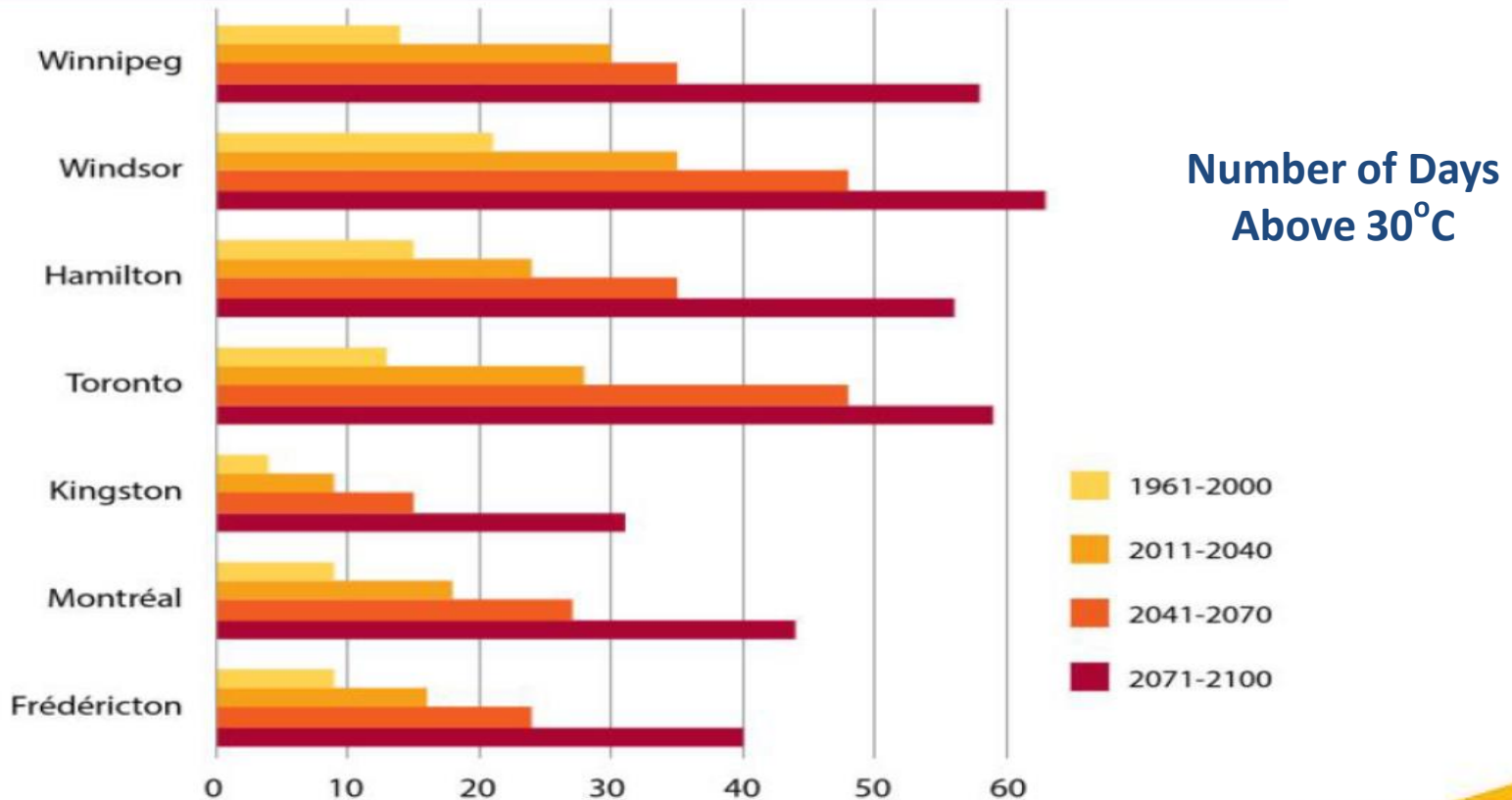
## Climate Change in Canada



- Average temperature has increased by twice the global average (1.6 °C from 1948 to 2013)
- In the arctic the average temperature has increased at nearly three times the global average (2.2 °C from 1948 to 2013)

# The Challenge cont'd

## Climate Change in Canada cont'd



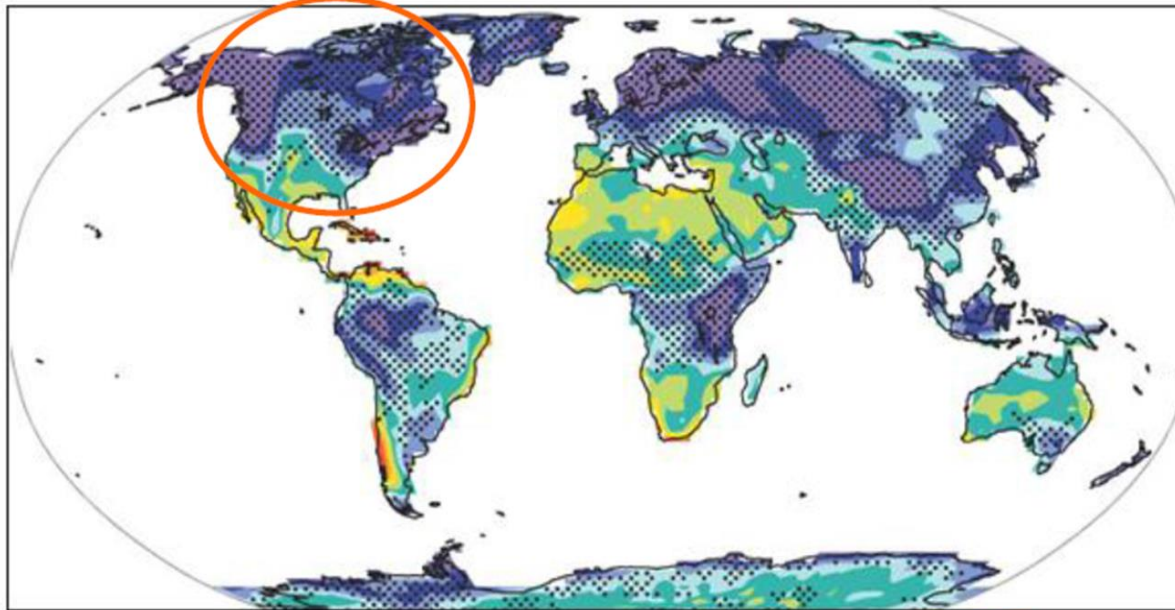
Source: Casati and Yagouti (2013)



# The Challenge cont'd

## Climate Change in Canada cont'd

Multi-model Simulation of **Precipitation Intensity Changes**  
Years 2080-2099 Minus Years 1980-1999 (middle emissions scenario)

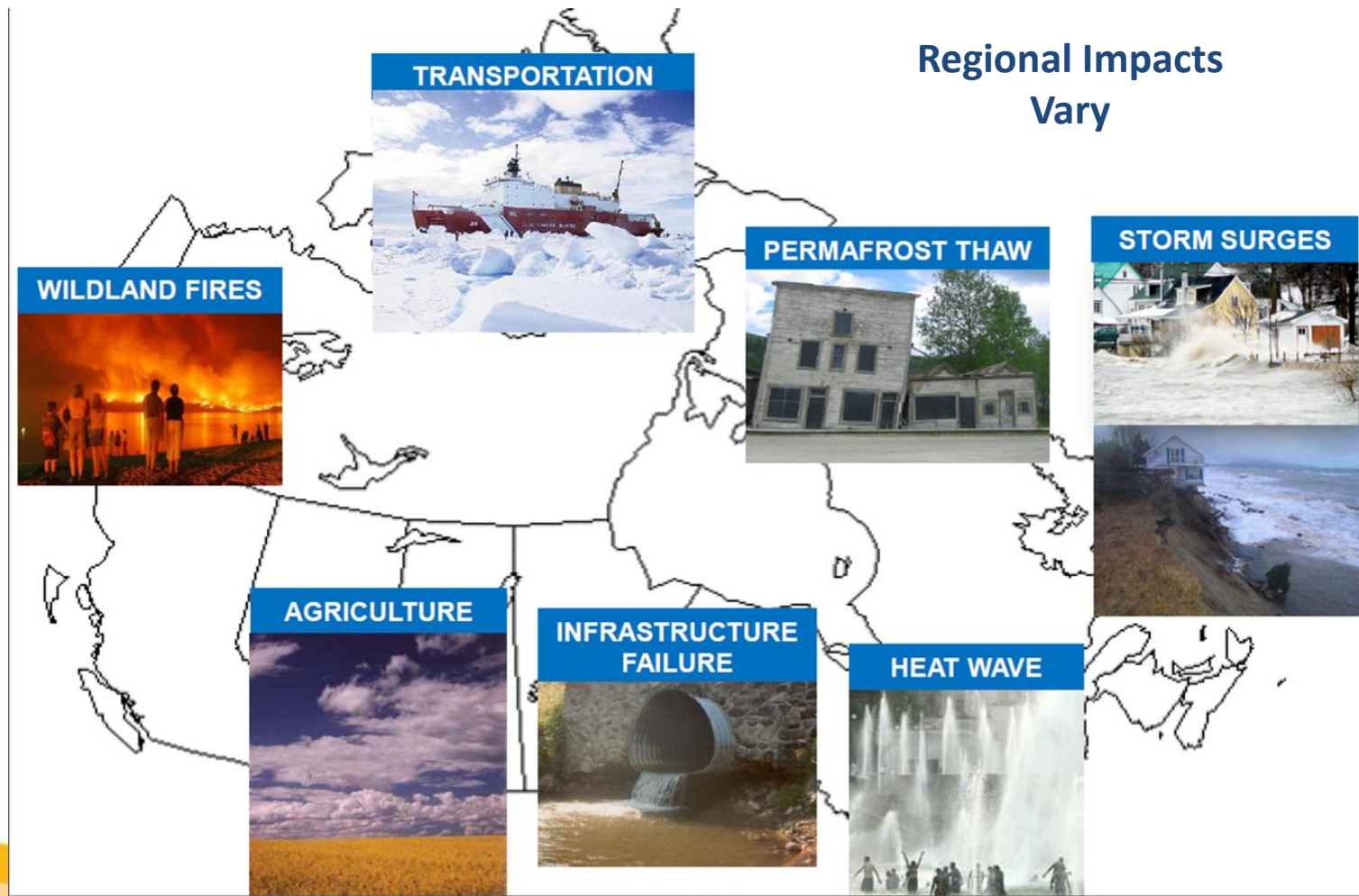


**More Extreme  
Rainfall**



# The Challenge cont'd

## Climate Change in Canada cont'd





# The Challenge cont'd

## Climate Change in Canada cont'd



Economic Impacts:  
Recent Evidence

Source: Insurance Bureau of Canada

# The Challenge cont'd

## Climate Change in New Brunswick



- Warmer: Increased risk of heat-related fatalities. New pests and invasive species
- Wetter: Increased risk of flood damage
- Stormier: Impacts from extreme winds , icing and associated damage (trees, homes, power grid)
- Rising sea levels: Increased risk of flooding and coastal erosion
- Overall increased risk to communities, infrastructure & natural resources

# The Challenge cont'd

## The Paris Agreement



COP21·CMP11  
**PARIS2015**  
UN CLIMATE CHANGE CONFERENCE

- **Brings 195 nations into a common cause for the first time in a legally binding agreement**
- **Strengthens action to limit global average temperature rise to below 2° C compared to pre-industrial levels**
- **Works toward a limit of 1.5° C; a safer objective**
- **All countries renew GHG targets every 5 years (Nationally Determined Contributions)**
- **Sub-national governments are recognized as participants (provinces, cities, states and regions)**

# The Challenge cont'd

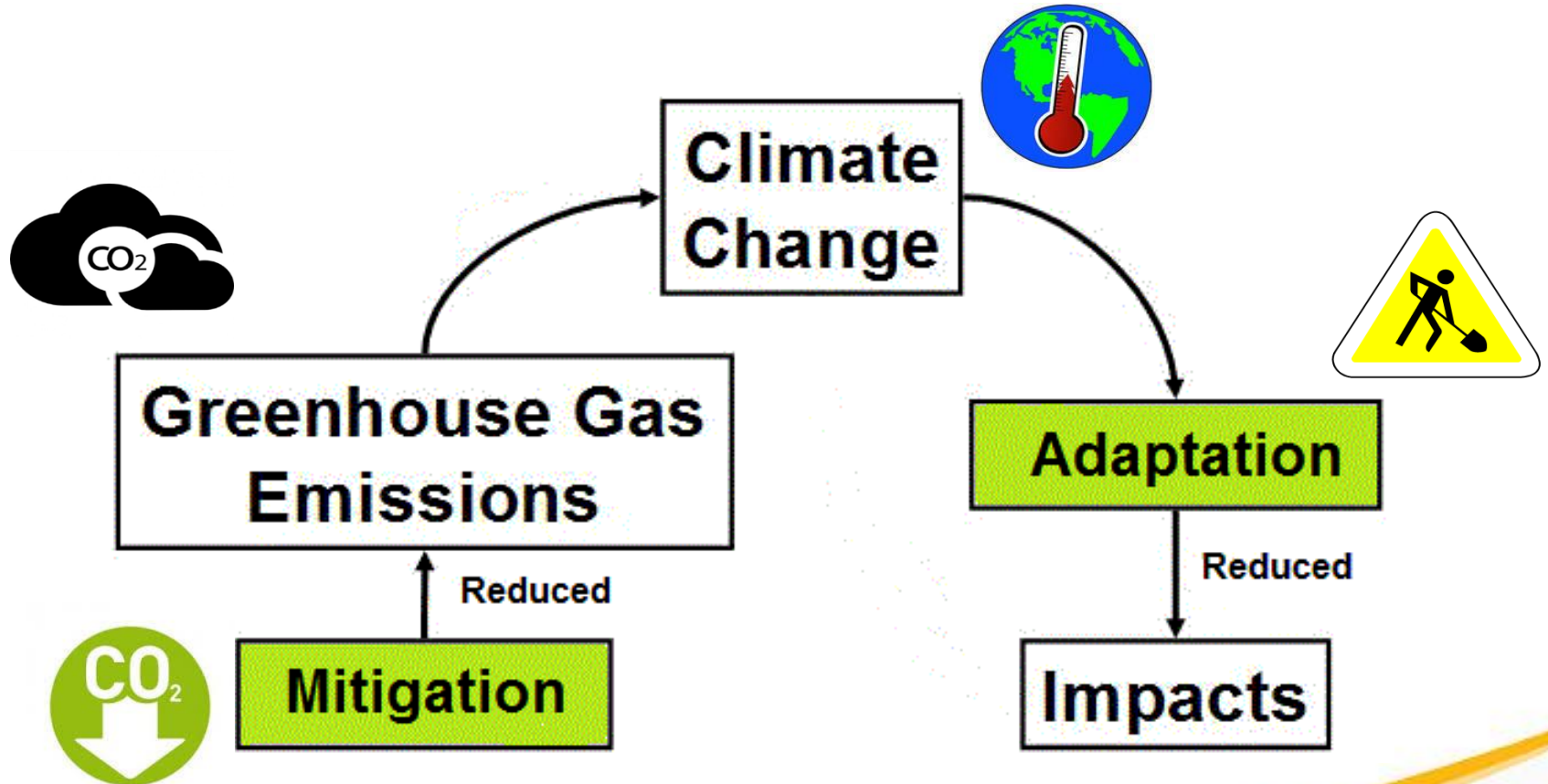
## The Vancouver Declaration on Clean Growth and Climate Change



- **Commitments by provincial and territorial First Ministers including: Deeper GHG cuts; Promotion of Clean Growth; Increased action on adaptation; Greater collaboration and partnerships**
- **First Ministers will meet in the fall of 2016 to finalize a Pan-Canadian Framework on Climate Change**

# Goals and Guiding Principles

## Goals





# Goals and Guiding Principles

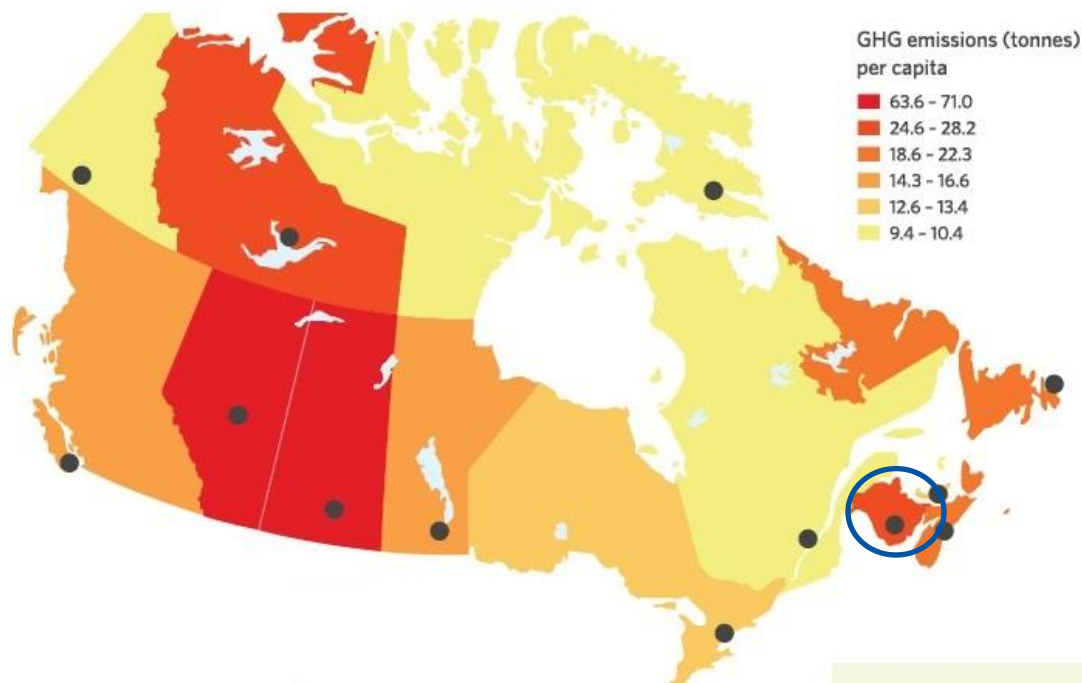
## Principles



- **Actions must be consistent with job creation and economic development**
- **Implement sustainable resource development (part of transition to a low carbon economy)**
- **Take advantage of economic development potential (e.g. investments in renewable energy, energy efficiency and cleaner energy)**
- **Measure progress and ensure accountability**

# Context for New Brunswick's Response

## Our Economy

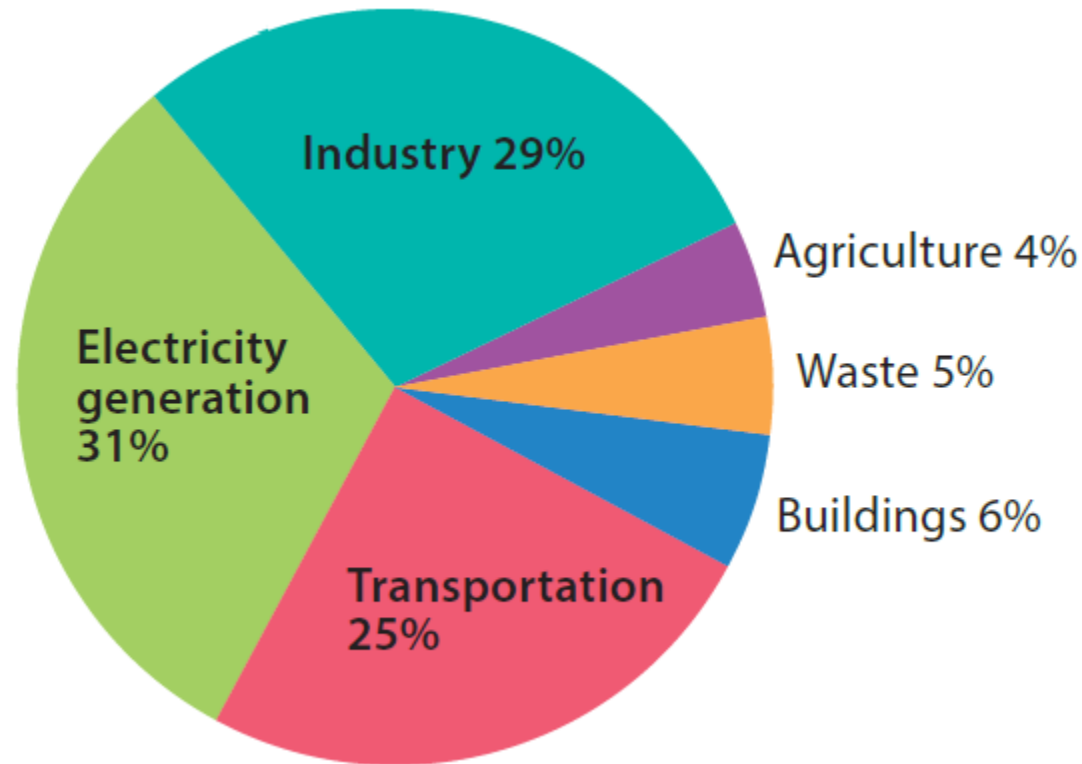


- **Dominated by energy-intensive, export-oriented industries**
- **High per capita GHG emissions**

GHG emissions in tonnes per capita (source: David Suzuki Foundation)

# Context for New Brunswick's Response cont'd

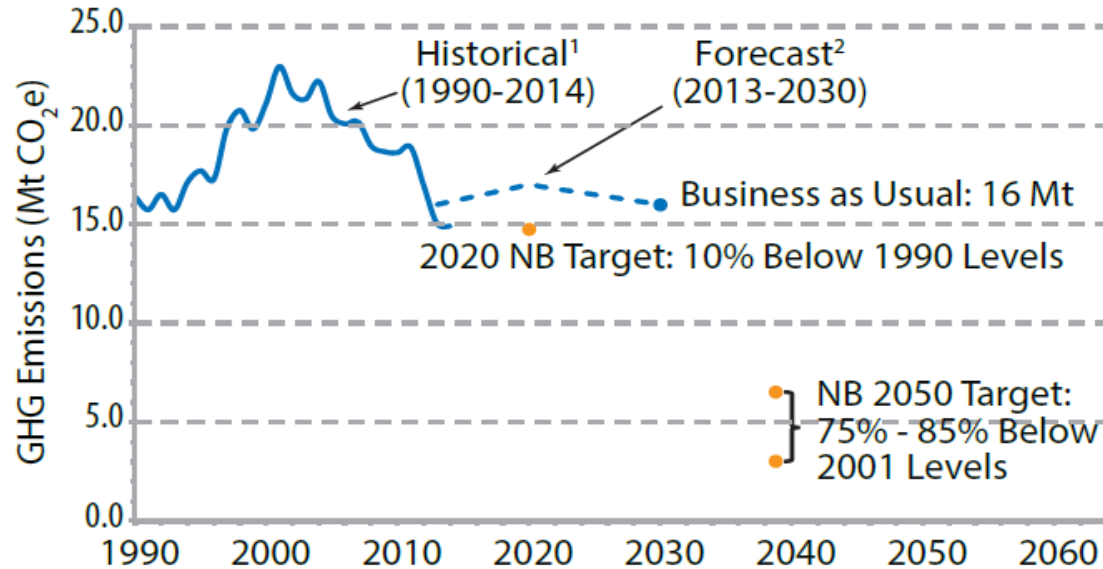
## Sources of New Brunswick's GHG Emissions



Source: Environment and Climate Change Canada. National Inventory Report. 2016

# Context for New Brunswick's Response cont'd

## New Brunswick Emission Trends



<sup>1</sup> Environment and Climate Change Canada, 2016. National Inventory Report 1990–2014. Greenhouse Gas Sources and Sinks in Canada

<sup>2</sup> Environment and Climate Change Canada, 2016. Canada's Second Biennial Report on Climate Change. Note: Forecast data is for the period 2013 to 2030. Forecast data will be updated by Environment and Climate Change Canada in October 2016 to reference 2014 historical data.



# Context for New Brunswick's Response cont'd

## Impacts of Climate Change





# Potential Actions

## 1. Mitigation: Transitioning to a Low-Carbon Economy



- Mitigation means reducing GHG emissions
- 92% of N.B.'s GHG emissions result from from using energy (heating, transportation, electricity generation)
- Two complementary pathways:
  - Reduce consumption of energy that produces GHG emissions (i.e. improve energy efficiency);
  - Use low emission energy sources

# Potential Actions cont'd

## 1. Mitigation: Transitioning to a Low-Carbon Economy cont'd

### Efficient Use of Energy

- About 31% of New Brunswick's GHG emissions are from generating electricity
- A broad, aggressive mix of energy efficiency programs therefore has good potential to reduce GHG emissions

#### Potential Actions Include:

- Helping residents, businesses and industry reduce their electricity bills by enhancing energy efficiency programs;
- Developing additional energy efficiency programs for all fuels (i.e., over and above electricity efficiency programs);
- Continuing to encourage innovation such as Smart Grid technologies to facilitate additional efficiency gains in electricity;
- Incorporating energy efficiency in the designs of buildings.

# Potential Actions cont'd

## 1. Mitigation: Transitioning to a Low-Carbon Economy cont'd

### Renewable and Low-Emission Energy

- **New Brunswick has a wealth of renewable energy sources**
- **These offer opportunities for job creation and sustainable economic development**

#### Potential Actions Include:

- **Requiring NB Power to source increasing amounts of in-province electricity sales from emission-free or carbon-neutral sources;**
- **Helping ensure that power distribution infrastructure and its administration facilitate the use of alternative energy sources;**
- **Continuing to encourage the development of small-scale renewable energy projects and exploiting emerging technologies.**

# Potential Actions cont'd

## 1. Mitigation: Transitioning to a Low-Carbon Economy cont'd

### Lower GHG Emissions from Transportation

- Transportation contributes about 25% of New Brunswick's total GHG emissions
- Vehicle choices (e.g. engine size), alternative fuels and alternative modes of transportation all have a role to play in GHG reduction

#### Potential Actions Include:

- Increasing the level of awareness of the benefits of energy-efficient vehicles;
- Creating and implementing strategies aimed at increasing the number of electric and hybrid electric vehicles;
- Clearing the way for cleaner travel options such as public transit, carpooling, ride-sharing bicycling and walking.

# Potential Actions cont'd

## 1. Mitigation: Transitioning to a Low-Carbon Economy cont'd

### Lower GHG Emissions from Industry

- Industrial facilities and processes are responsible for about 29 per cent of New Brunswick's total GHG emissions.
- The province currently requires industries emitting more than 50,000 tonnes of GHGs per year to report their emissions and submit GHG management plans.

#### Potential Actions Include:

- Lowering the GHG emission reporting and management threshold;
- Establishing regulations that limit GHG emissions.



# Potential Actions cont'd

## 1. Mitigation: Transitioning to a Low-Carbon Economy cont'd

### Carbon Pricing

- When GHG emissions cost money, this creates an incentive to reduce emissions
- Carbon pricing is already underway in B.C., Alberta and Quebec. Once Ontario and Manitoba implement their planned carbon pricing programs, around 90 per cent of Canadians will be paying a price for carbon emissions

#### Potential Actions Include:

- Investigating potential carbon pricing options for New Brunswick including the implications of not instituting a carbon price;
- Identifying the best option for New Brunswick informed by further engagement with New Brunswickers.

# Potential Actions cont'd

## 1. Mitigation: Transitioning to a Low-Carbon Economy cont'd

### Carbon Sinks and Sequestration

- A carbon sink absorbs carbon or keeps it from entering the atmosphere
- Carbon sinks include natural features (wetlands, forests)
- Carbon sinks sequester (store and isolate) carbon and may represent an important method of mitigating climate change

#### Potential Actions Include:

- Continuing to identify and encourage opportunities for enhancing forest and agricultural carbon sinks;
- Encouraging restoration, preservation and management of green buffers and urban forests.

# Potential Actions cont'd

## 1. Mitigation: Transitioning to a Low-Carbon Economy cont'd

### Research and Innovation

- Technological innovations and advancements are critical to accelerating the transition to a low-carbon economy
- They are also key to releasing the resulting job-creation potential

#### Potential Actions Include:

- Building connections and encouraging collaborations between businesses, researchers and technological experts;
- Helping researchers, innovators and early adopters gain access to capital investment.

# Potential Actions cont'd

## 2. Adaptation: Responding to the Impacts and Risks of Climate Change



Hoyt, 2015 CBC

- Adaptation means making adjustments in decisions and activities, in response to observed or expected changes in climate.
- Timely adaptation reduces or avoids future costs and can enhance economic competitiveness

# Potential Actions cont'd

## 2. Adaptation: Responding to Impacts Risks of Climate Change cont'd

### Identifying Climate Change

- A changing climate presents both risks and opportunities for New Brunswick
- To reduce the risks and take advantage of the opportunities, we need to fully understand the challenges posed by a changing climate

#### Potential Actions Include:

- Strengthening research capabilities in climate change;
- Developing a more coordinated and collaborative approach to tracking changes in the physical environment (e.g., temperature, precipitation, sea levels and migration of pests and invasive species, etc.).



# Potential Actions cont'd

## 2. Adaptation: Responding to Impacts Risks of Climate Change cont'd

### Identifying Vulnerabilities and Planning for Climate Change

- **New Brunswickers rely heavily on natural resources. Our economy is therefore particularly vulnerable to climate change**
- **Identification of vulnerabilities to climate change effects is the first step towards adaptation**

#### Potential Actions Include:

- **Developing analytical and educational tools to assist in the identification and response to vulnerabilities;**
- **Requiring that future climate impacts be considered as part of public funding decisions for roads, buildings etc.;**
- **Establishing targets for the completion of vulnerability assessments and adaptation plans in various sectors;**
- **Working with communities and regions to incorporate climate change and adaptation in land-use planning.**

# Potential Actions cont'd

## 2. Adaptation: Responding to Impacts Risks of Climate Change cont'd

### Taking Advantage of Potential Opportunities

- There will be opportunities for certain sectors (e.g., agriculture and tourism) as the climate changes
- There may be opportunities to market our adaptation tools and approaches beyond our borders

#### Potential Actions Include:

- Examining new opportunities in agriculture, fisheries and aquaculture as a result of changing growing conditions; and
- Working with the tourism and recreation sectors to pursue other new opportunities presented by our changing climate.

# Potential Actions cont'd

## 3. Provincial Government Leadership



Global News

- As a major energy consumer, the provincial government has a role to play in demonstrating specific actions and inspiring others to take action

# Potential Actions cont'd

## 3. Provincial Government Leadership cont'd

### GHG emissions from provincial vehicles and facilities

- The provincial government owns and operates about 1,000 buildings and 4,500 vehicles. These assets produce around 400,000 tonnes of GHG emissions annually, with energy costs of \$85 million each year

#### Potential Actions Include:

- Developing energy efficiency, carbon emission or renewable energy standards for government-owned and -funded facilities;
- Showing leadership in areas such as energy audits, low carbon procurement and travel alternatives for public servants;
- Moving toward a carbon-neutral government.

# Potential Actions cont'd

## 3. Provincial Government Leadership cont'd

### Building Broader Awareness

- The fight against climate change will be more successful when New Brunswickers are clearly aware of the serious nature of the issues and know what they can do in response

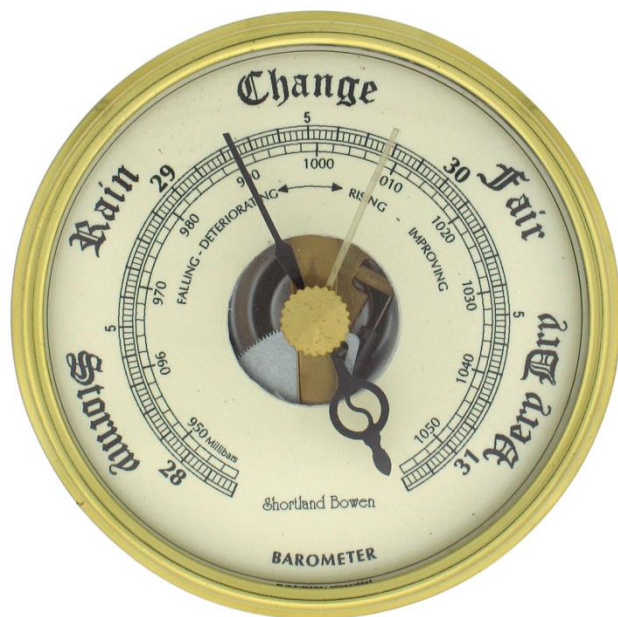
#### Our Responses Could Include:

- Facilitating education and awareness initiatives both inside and outside the formal education system;
- Helping New Brunswick households and individuals understand what they can do to drive the cultural shift needed to reduce GHG emissions;
- Sharing emerging information about climate change as it becomes available.



# Potential Actions cont'd

## 4. Measuring and Reporting



- Measurement, reporting and verification are important elements of an effective response to climate change and are vital to assessing progress

# Potential Actions cont'd

## 4. Measuring and Reporting cont'd

- **Transparent reporting will enable government and all New Brunswickers to track the effectiveness of GHG reduction initiatives, measure progress in adapting to climate change and make any adjustments necessary to achieve provincial targets and goals.**

### Potential Actions Include:

- **Ensuring the ongoing release of annual progress reports on implementation;**
- **Assigning specific responsibilities for implementing and reporting the results of specific actions;**
- **Using appropriate monitoring criteria, tools and information management systems.**

# Some Questions to Consider

- 1. What are the best ways to ensure that energy efficiency and other GHG reduction strategies will provide the highest economic benefits for the province? What approaches would benefit both the environment and the economy?**
- 2. What specific steps are required to help direct the provincial economy toward a low-carbon future? What specific elements of the low-carbon economy should New Brunswick pursue as a priority?**
- 3. Given that a reliable energy system is essential for a functioning society and given that burning fossil fuels is a major source of GHG emissions, what is the appropriate mix of renewable and non-renewable energy resources that the province should pursue now and in the future?**

# Some Questions to Consider cont'd

4. How can GHG emission reductions be achieved while improving the competitiveness of New Brunswick industries?
5. What are the most effective methods to influence the behaviours of individuals, households, governments and business to reduce energy waste and advance investment in low-carbon opportunities?
6. For what priority areas should New Brunswick seek federal funding in the areas of mitigation and adaptation?
7. What are the proper roles for individuals, businesses, communities, non-governmental organizations and governments in climate change mitigation and adaptation?

# Some Questions to Consider cont'd

8. How do governments ensure that efforts to build resilience remain ambitious and sustained?
9. What climate information, science and tools are needed to support decision-making, and what improvements can be made in the way information is collected and disseminated, and services are provided?
10. What are the most effective instruments and approaches, including policies, programs, standards, regulations, laws and others to implement strong, complementary adaptation actions within New Brunswick?