

Climate Change in Ontario — Issues and Solutions — Background for Students

Students, Your Challenge is to come up with ideas on how Ontario can become a low-carbon province, and present these to the Premier of Ontario. To do this, you are conducting inquiries in your class and working with over 400 other students — the voice of youth on climate action for Ontario!

Climate Change

Global warming describes the recent rise in the average global temperature. Since this rise is caused by increased concentrations of greenhouse gases trapped in the atmosphere, and since greenhouse gases are largely caused by burning fossil fuels to produce energy, scientists have concluded that human activity is largely responsible for recently observed changes to our climate.

Global warming is affecting agriculture, ecological systems, biodiversity, economies, species migration and more. Extreme weather events such as storms and droughts are becoming more frequent around the world. Melting ice at the poles has caused global sea levels to rise.

The effects on infrastructure are apparent and costly: roads that buckle in severe heat, water mains that overflow in severe rain, hydro lines coated with heavy ice that snap and leave tens of thousands of Ontario families and businesses without power.

Climate change can affect Indigenous communities, jeopardizing First Nations and Métis ways of life, health, territories and resources. These communities depend on natural ecosystems for food supplies, and on activities such as fishing, hunting, harvesting and trapping for economic opportunities that are now being threatened by a changing climate.

You've probably seen the Affects of Global Warming Personally

The massive rainstorm in July 2013? 125 mm of rain fell in just a few hours over some parts of Ontario, leading to flooding and property damage estimated at \$940 million in Toronto alone — the most expensive natural disaster in Ontario history.

Or the ice storm in December 2013.

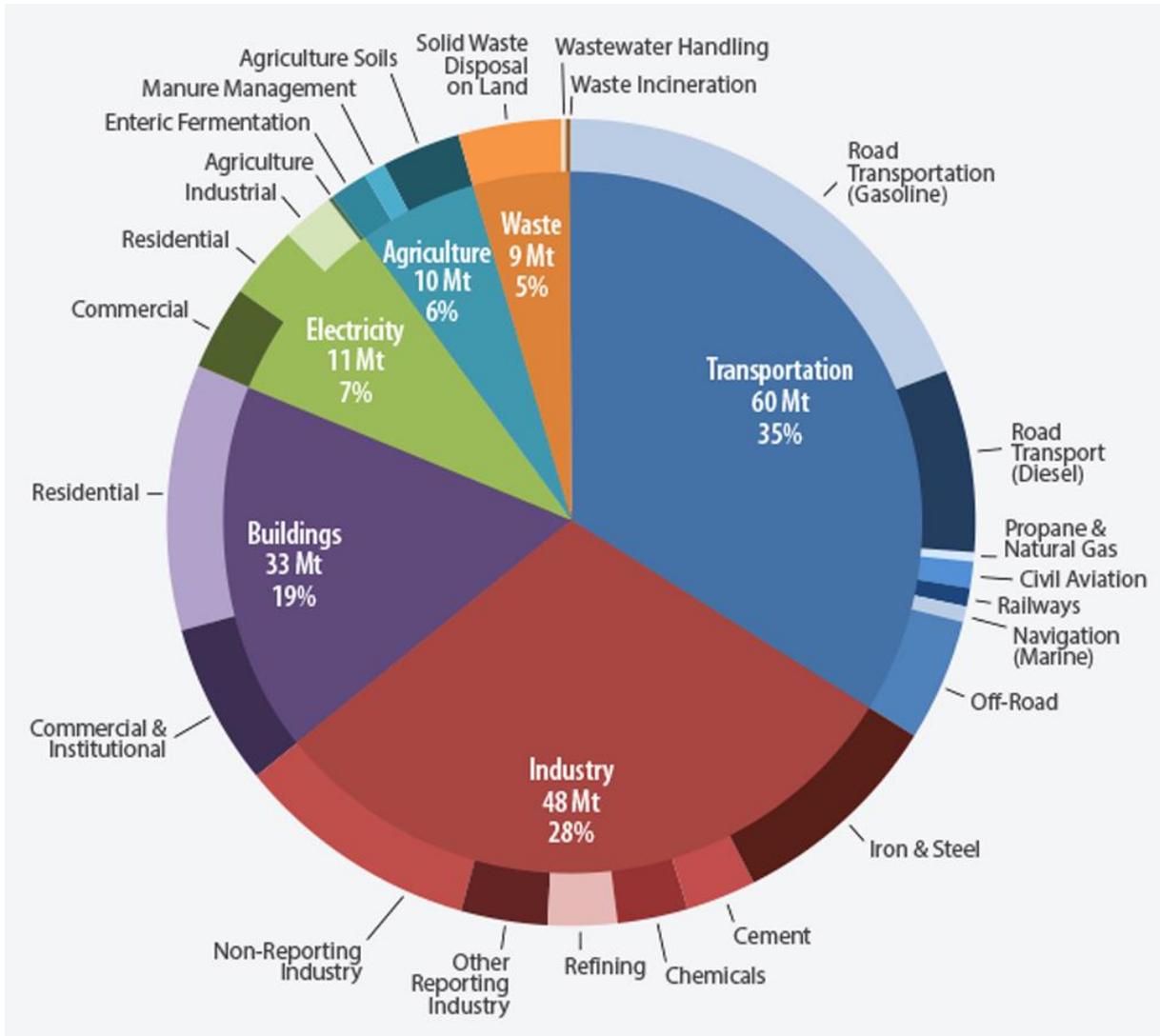
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Some of the Impacts of Climate Change on Ontarians

Extreme and Variable Weather	<ul style="list-style-type: none"> • More frequent and severe weather events such as rain and ice-storms which can cause flooding, soil erosion, infrastructure damage and power system outages. • Winter ice road seasons may shorten, reducing access for remote First Nations communities and further affecting the cost and availability of foods and other goods.
Human Health	<ul style="list-style-type: none"> • Climate change will cause high-latitude areas like Ontario to warm drastically. • Extreme heat can aggravate health problems particularly for the old, very young and ill. • Rising average temperatures will likely extend the range of disease carriers like rats, mosquitoes and ticks.
Forests	<ul style="list-style-type: none"> • Climate change affects the health of forests, increasing the risks of forest fires and insect damage. • It may extend the range of some species of trees further north.
Recreation	<ul style="list-style-type: none"> • The ice-free season for recreational boating and fishing in the Great Lakes area could be longer. However water levels may be lower due to increased evaporation as a result of hotter temperatures. • Over the next 30 years, the ski season in southern Ontario could be 30% shorter. In the same period, the snowmobiling season in the north could be 87 days shorter. • Golfing, visits to provincial parks, and the beach-season are expected to increase.
Plants and Animals	<ul style="list-style-type: none"> • The ranges of plant and animal species are already shifting and could continue to shift northwards by hundreds of kilometres over the next century. • As lakes and streams warm, cold-water fish species will be affected. • Climate change could result in increased numbers and impacts of invasive species such as the mountain pine beetle and ticks carrying Lyme disease.
Food	<ul style="list-style-type: none"> • Changed growing seasons and species migration patterns which in turn, could affect livelihoods in rural and northern communities and First Nations and Métis communities. • Climate change may disrupt food production, access and price stability.

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Greenhouse Gases, by sector, Ontario in 2013



In 2013, Ontario's greenhouse gas emissions were estimated to be 171 megatonnes (Mt).

What do you notice from this chart? Which sectors emit the most greenhouse gases? The biggest emitters pose the biggest challenges but also the biggest opportunities!

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Mitigation versus Adaptation

Climate change **mitigation** refers to efforts to reduce or prevent the emission of greenhouse gases. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices or consumer behaviour. Climate change **adaptation** refers to putting processes and practices in place to deal with the results of climate change such as farming practices that are better suited to more extreme weather.

Taking Action

To minimize the impacts of climate change, the Government of Ontario has set the long-term goal of reducing greenhouse gas emissions by 80% below 1990 levels by 2050.

Climate change is a problem that is critically important and urgent. It needs to be fought around the globe, and it needs to be fought here in Ontario. Our actions on climate change are helping to secure a healthier environment, a more competitive economy, and a better future for our children and grandchildren. **Kathleen Wynne, Premier of Ontario**

Key Issues & Actions in Selected Sectors

The following describes selected elements or sectors of life in Ontario — for each describing the related climate change issues and some ideas for actions that are, and can, be taken to reduce greenhouse gases. *This table will start you thinking about possible actions you can take as individuals, within your communities, and actions the Government can take to move towards a low carbon Ontario.*

Transportation	
<p>At 35 per cent, transportation emissions are the single-largest source of emissions in the province. In fact, emissions from passenger car trips alone (well over 10 million per day) are greater than the emissions from Ontario’s iron, steel, cement, chemicals sectors combined.</p>	<p><u>Possible Actions:</u></p> <ul style="list-style-type: none"> • Provide incentives for car sharing. • Build new communities close to transit. • Encourage active transportation. • Improve vehicle efficiency standards. • Encourage rail transportation of goods. • Provide tax-exempt transit passes. • Move to hybrid and electric vehicles. <p><i>What actions to reduce GHG emissions from transportation have been taken in your community? — need to be taken?</i></p>

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Buildings and Communities

The buildings sector represents about 19 per cent of the province's total greenhouse gas emissions (third largest source). This number rises to about 24 per cent if electricity used by equipment and appliances in buildings is taken into account.

These emissions come from the use of natural gas for space heating, water heating and other direct emission sources in residential, commercial and institutional buildings.

Possible Actions:

- Measures such as conservation and retrofits have meant a significant improvement in emissions intensity in the buildings sector — about 32 per cent between 1990 and 2012.
- Establish a retrofit program for buildings
- *The Green Button Initiative* enables a household or business to compare their energy consumption with other similar consumers increasing awareness of energy usage and promoting conservation.
- Implement sustainable communities policies with regards to density, proximity to transit, etc.

What actions to reduce GHG emissions from buildings have been taken in your community? — need to be taken?

Agriculture

Agriculture has a complex relationship with emissions. Some farming activities — raising livestock, using on-farm equipment such as tractors or food processing — add emissions. Plants and vegetation, on the other hand, absorb carbon dioxide, a key greenhouse gas, and store it in plant material and the soil, thereby reducing atmospheric carbon.

Possible Actions:

- Land use planning that helps protect agricultural land — which is fundamental to Ontario's capacity to produce food — climate-smart farming practices, and energy efficiency all help ensure the right balance for the agri-food sector's success, the health, security and productivity of fertile lands, and the effective management of emissions.

Industry

Ontario's industrial emissions, the second-largest source of emissions overall, dropped by 21 per cent between 1990 and 2012. In many cases, this was due to the implementation of energy efficiency measures. There is also a decreasing trend in carbon intensity of manufacturing industries. In other cases, emissions reductions have been due to contraction and shifts in the manufacturing sector, including slowdowns in key industries such as forestry.

Possible Actions:

- Implement a **cap and trade** program that sets a maximum allowance on the amount of greenhouses a company can emit. If a company goes over their set limit, or under, they can trade buy and sell their allowance to meet the government set target.
- See the Government of Ontario [website for a video and information on Cap and Trade](#).

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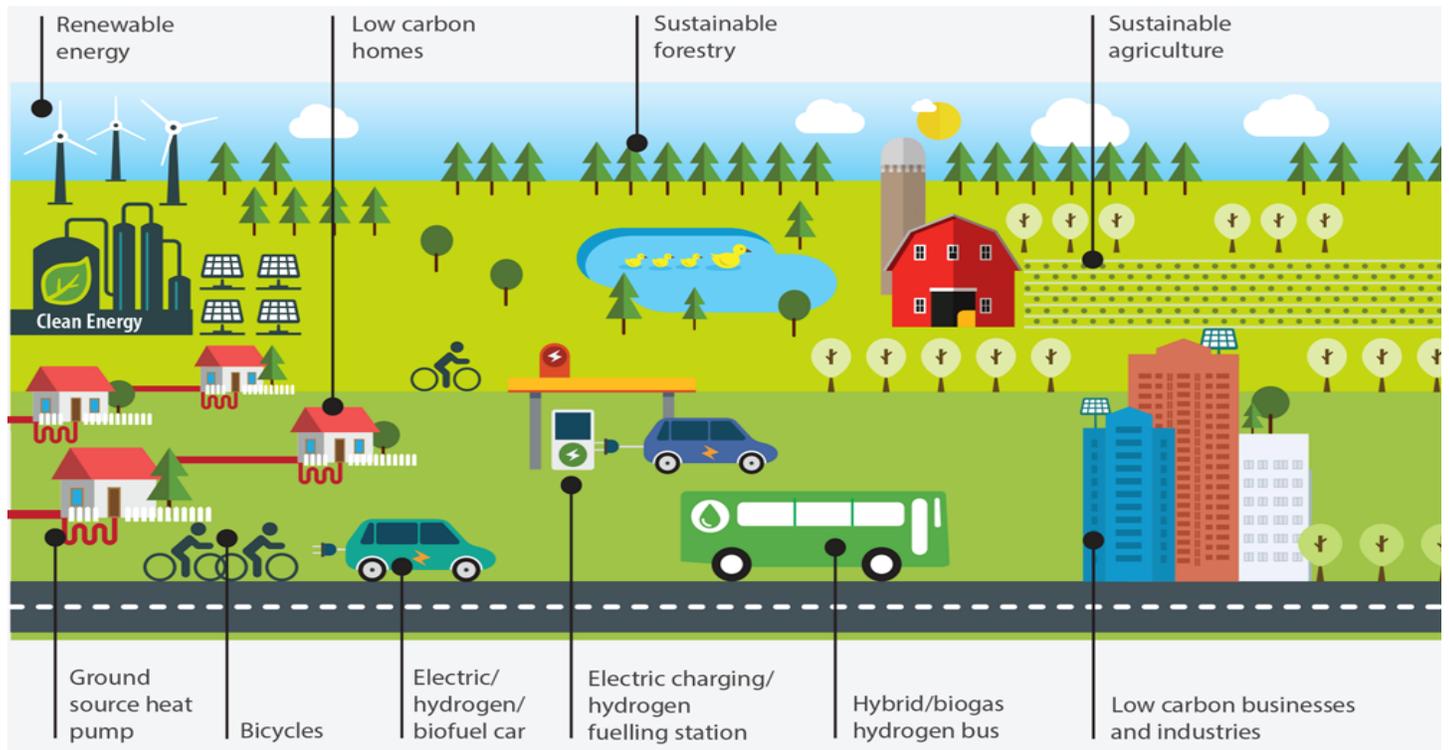
Electricity

While Ontario has made great progress in lowering emissions in the sector by eliminating the use of coal (a non-renewable, carbon emitting fuel) this industry is still one of the top emitters of greenhouse gases! Emissions from this sector are driven by Ontarian's high demand for electricity.

Possible Actions:

- The Government of Ontario has phased out coal-fired electricity generating plants.
- Key actions are the increased use of renewable energy to produce electricity coupled with energy conservation and demand-side management programs.
- The Province's Feed-In Tariff program facilitates the increased development of renewable generating facilities by providing funding for upgrade and new technologies.

The Government of Ontario's Vision for the Future — *What's Yours?*



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