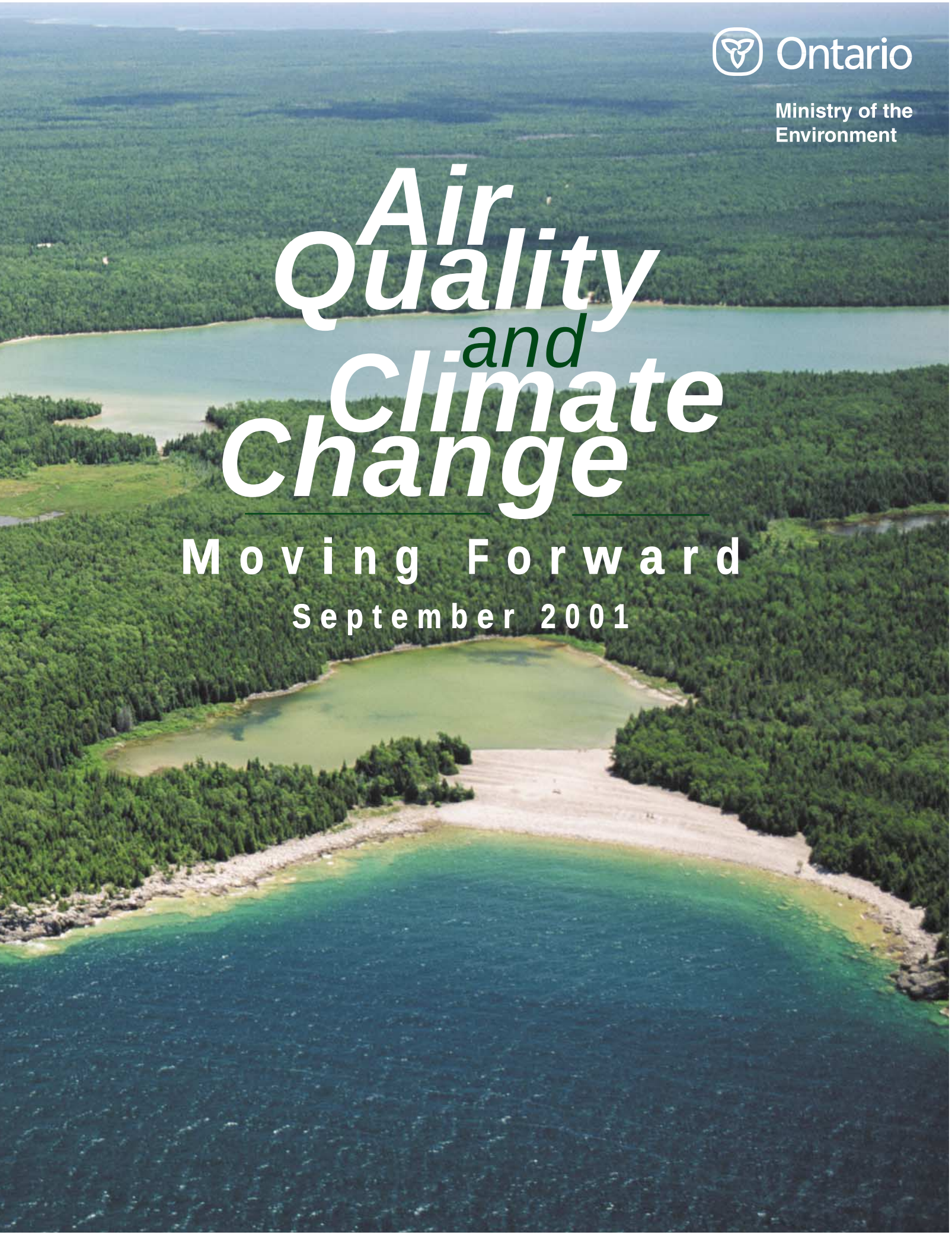

Ontario

Ministry of the Environment

# Air Quality and Climate Change

## Moving Forward

September 2001

# Air Quality and Climate Change: Moving Forward

## September 2001

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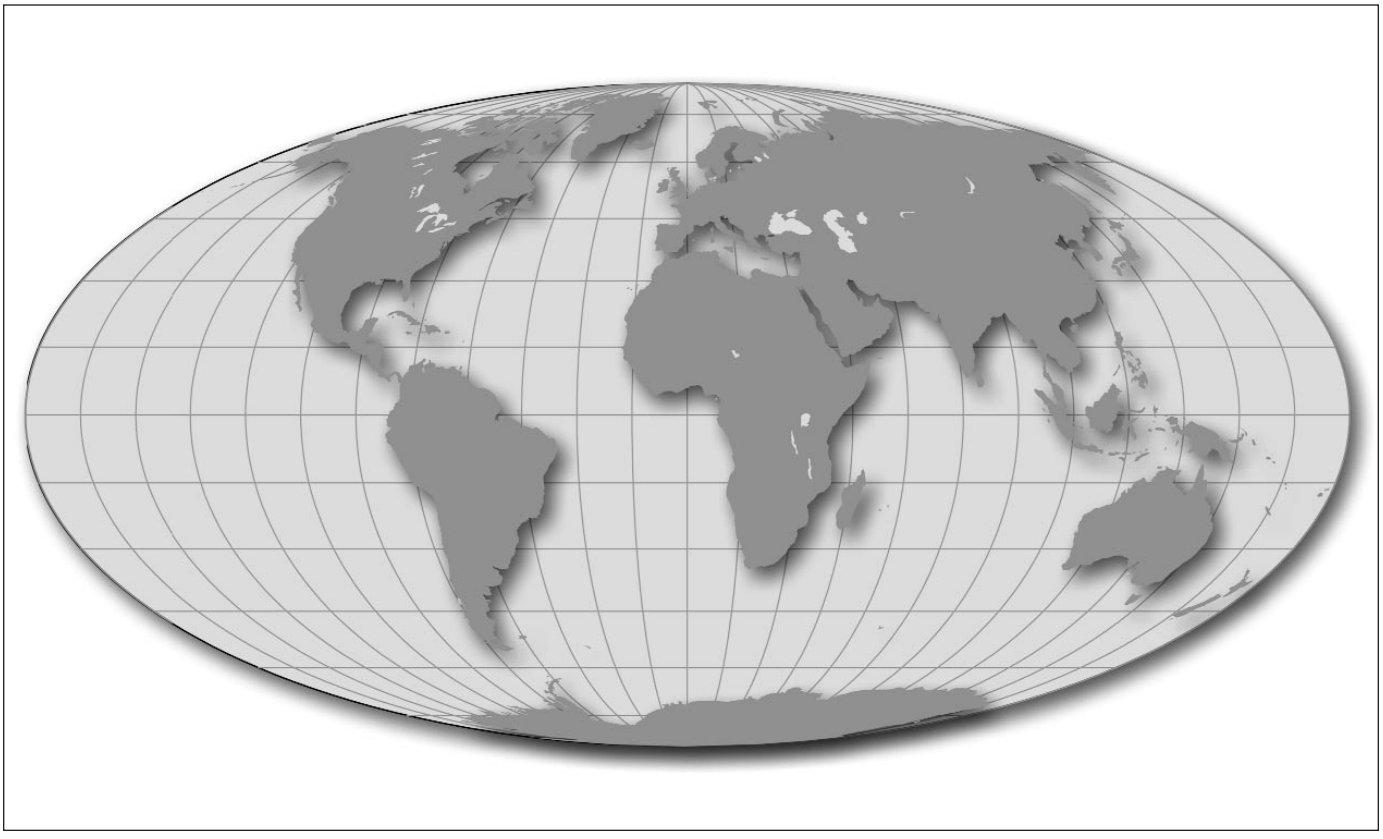
# Introduction

Climate change has been described as the most important environmental issue of our lifetime. Accordingly, in 1997 world leaders met in Kyoto, Japan where they adopted the Kyoto Protocol - the international agreement to address climate change. The Protocol calls for developed countries that are signatories of the agreement to reduce their collective greenhouse gas emissions by 5.2 per cent from 1990 levels.

In Canada, the provincial, territorial and federal governments continue to assess the Kyoto Protocol. Ontario continues to emphasize that the federal government and all other provinces and territories must work together on an effective climate change strategy for Canada. In the meantime, Ontario continues to introduce programs that are reducing greenhouse gas emissions in the province right now.

Climate change can be a complicated subject. Much has been written on the subject recently that may be confusing to the average person. This report seeks to demystify the science of climate change and explain the potential effects of greenhouse gases and what is being done to address the risks of global warming. The report also outlines some of the things individuals can do to reduce greenhouse gases and what Ontario is doing to address climate change.



# Climate Change 101

## Climate change

Nothing changes more often than our weather. Our climate however, is something different entirely. While weather refers to the conditions we see outside our windows, like daily changes in temperature, wind and precipitation, climate is the "average" weather in a given place. Climate change therefore, is the gradual changing of long-term weather patterns.

Our climate shapes every aspect of our environment – from the trees that surround us to the crops we grow, and even the way we build our houses and the clothes we wear. Unexpected changes in weather can be inconvenient, but we all know them to be short-lived. Getting ready for them can be as easy as remembering to put on a sweater, or carrying an umbrella. Preparing for climate change on the other hand, will be considerably more challenging.

## The greenhouse effect

Picture the Earth's atmosphere as a huge protective greenhouse that keeps the planet warm. The Earth's natural greenhouse effect occurs as a result of so-called "greenhouse" gases that trap heat from the sun's rays in our atmosphere. This heat in turn, naturally warms our planet. If there were no heat-trapping gases in our atmosphere, the Earth's temperature would sit at minus 18 degrees Celsius - too cold to sustain life.

Since the Industrial Revolution, humans have increasingly relied on combustion - the process of burning - to heat our homes, drive our cars and operate our factories. This reliance on combustion has drastically increased the amount of greenhouse gases released into our atmosphere.

The greenhouse gases most closely associated with human activity are carbon dioxide, methane and nitrous oxide. Since the time when accurate measurements could be taken, carbon dioxide and nitrous oxide have both increased by 13 per cent, while methane is up 146 per cent. Carbon dioxide is released primarily through the burning of fossil fuels that power our cars and generate much of our electricity, while methane is produced when vegetation and waste are burned or decompose without the presence of oxygen. Landfill sites and livestock operations are large producers of methane. Nitrous oxide is released when crops are planted, particularly when fields are tilled.

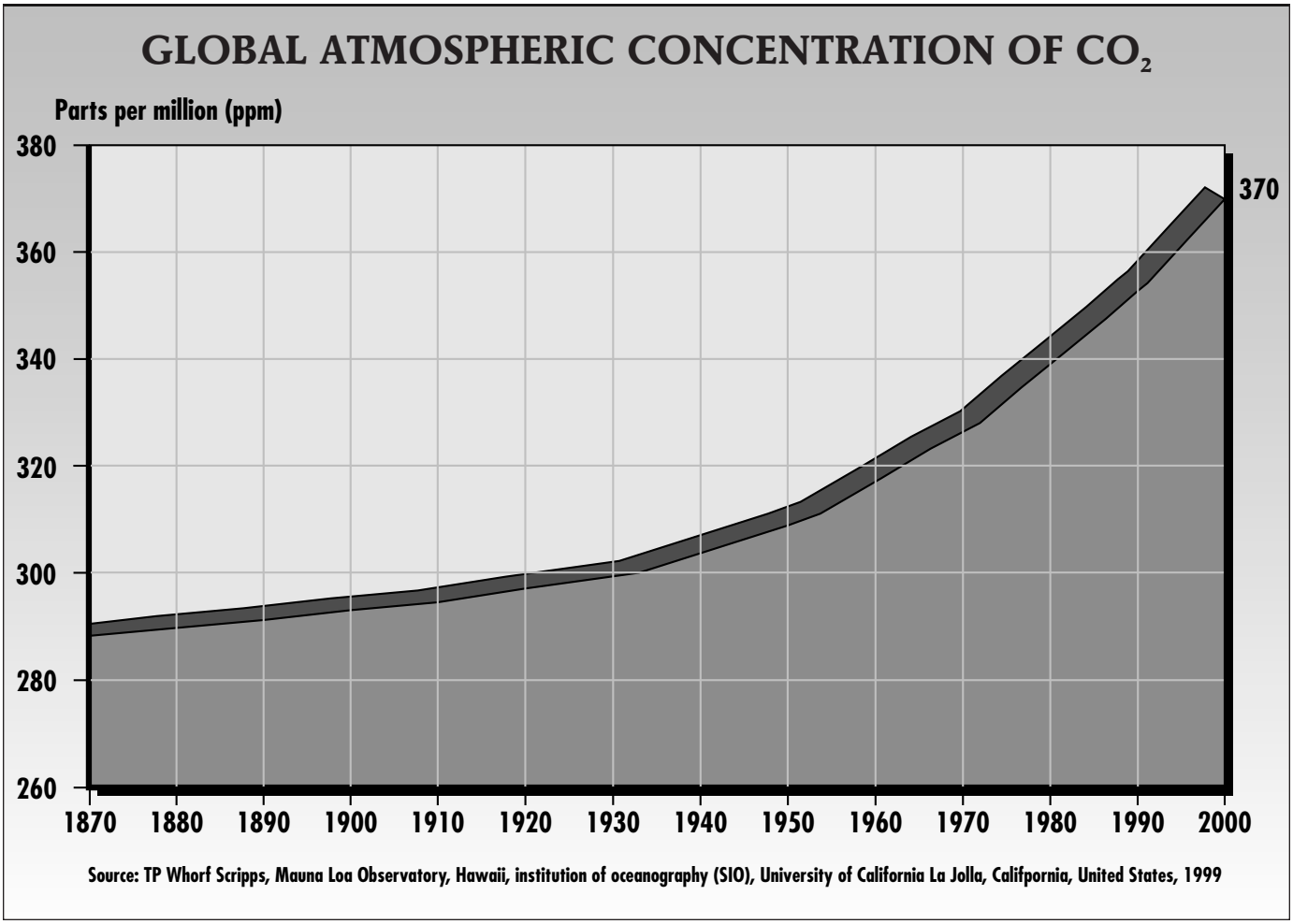
## Global warming

The term "global warming" refers to the rise in the planet's average temperature. Human's have been keeping track of temperatures for about 140 years. During the last several decades, things have heated up considerably. The 1990s was the warmest decade on record and 1998 was the warmest year. In little more than 140 years, the Earth's average temperature has risen by a full degree Celsius. A large number of scientists hold the view that human activities contribute to this global warming.

This may not seem like much, but the effects of even the smallest changes in average temperature can be dramatic. For example, the average global temperature during the last ice age was only 10 degrees Celsius lower than it is today. This small difference in temperature was enough to create a massive sheet of ice that covered virtually all of Canada.

## Global warming and climate change - what are the risks?

With rising temperatures, we often see changes in our current precipitation and wind patterns. It is also expected that severe weather events such as




hurricanes, tornadoes, floods and drought, will occur more frequently. By extension, a change in climate patterns will shift agricultural and vegetation zones, affecting everything and everybody. On a global scale, a warming atmosphere could lead to the gradual melting of the polar ice caps, leading to rising sea levels and spelling trouble for coastal cities.

The risks of climate change are serious. For Ontario, they include more frequent severe weather events such as thunderstorms, ice storms, tornadoes, floods or droughts. Rising temperatures could also lead to a drop in the Great Lakes' water levels, which would reduce the water supply to municipalities and their industries. Even our forests could be affected, suffering more fires, insects and disease due to increased average temperatures.

Rising temperatures could also drive wildlife further north in search of a hospitable climate. Species that do not adapt quickly enough risk extinction. Not least of all, the incidence of hot weather-related health problems such as heat stress and poor air quality days could see a rise, while there is also the risk of tropical diseases spreading north.

### Tackling two problems at the source

The human-produced gases that cause climate change are often the pollutants that are also responsible for other air quality concerns. For example, nitrogen oxides contribute to climate change and are also building blocks for smog and acid rain.

Generally colourless and odourless, nitrogen oxides are emitted through combustion in our motor vehicles, power plants, small engines, incinerators and a wide variety of industrial processes.

In the presence of sunlight, nitrogen oxides combine with volatile organic compounds that are produced through automobiles, industry and our use of paints and solvents. This combination produces ground-level ozone. Ground level ozone - not to be confused with the Earth's protective

ozone layer - is a major component of smog.

The harmful effects of nitrogen oxides continue beyond smog when the gas re-combines in the atmosphere to form a complex mix of acidic compounds that cause acid rain. Acid precipitation in the form of rain, snow, or even fog leads to the acidification of lakes and soils. Even physical structures like buildings or bridges can feel the corrosive effects of acid rain.

Last but certainly not least, some nitrogen compounds also contribute to global warming.

## Co-benefits

Since it is often the same processes that emit pollutants that cause smog, acid rain and climate change, reducing air pollution from a single process or action can produce a number of improvements to the air we all share. As we have seen, by reducing emissions of nitrogen oxides, smog, acid rain and greenhouse gas emissions are also reduced. These multiple improvements are known as "co-benefits".

Programs like Drive Clean, Ontario's vehicle emissions testing program, are designed to take advantage of these "co-benefits". The program is reducing sulphur dioxide, nitrogen oxides and volatile organic compounds, all of which contribute to smog, acid rain and global warming.

There can be important benefits achieved through the introduction of programs that take advantage of "co-benefits" by tackling more than one air quality challenge at a time.

# Climate Change: A Global Responsibility

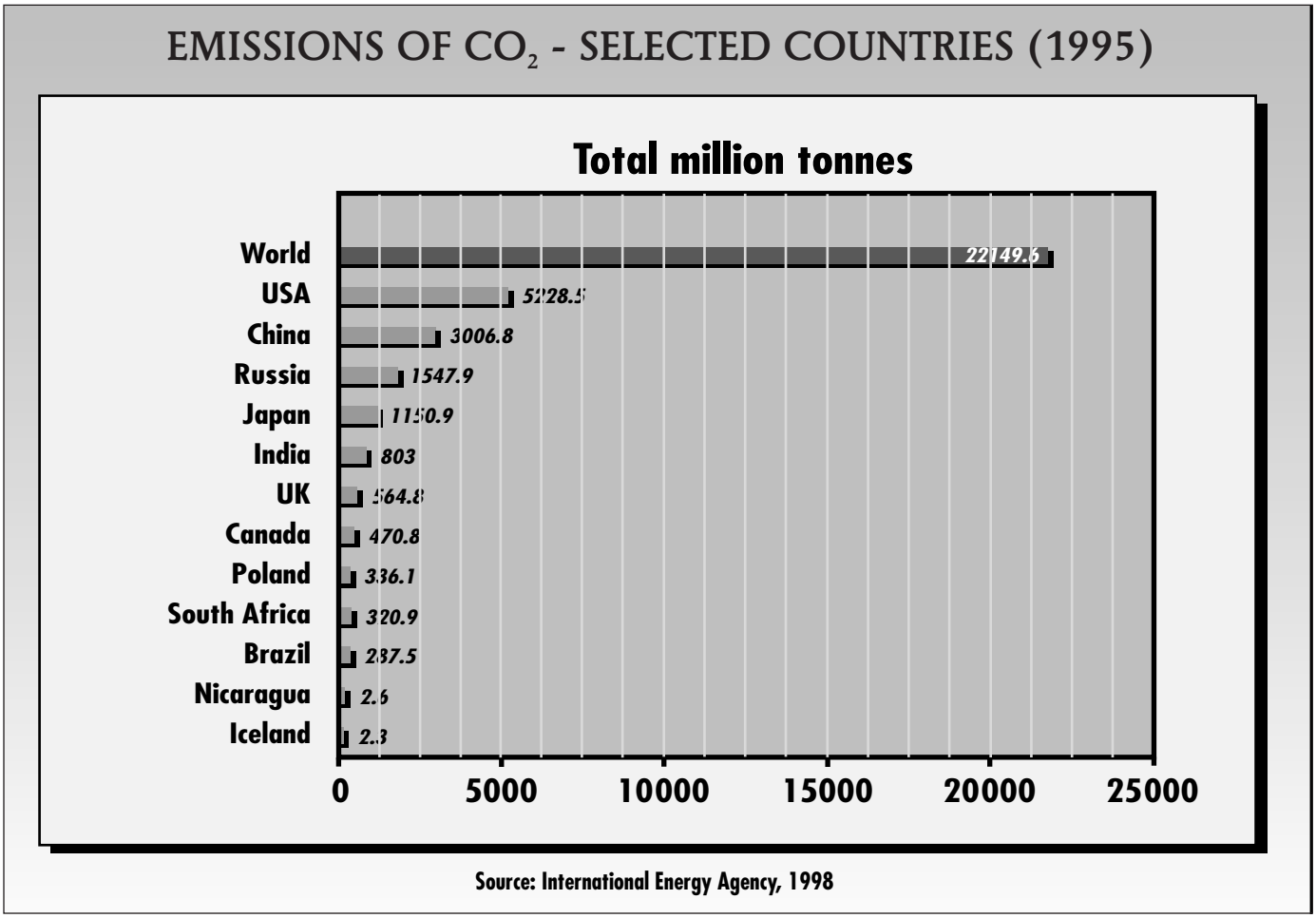
## International

In 1992, countries from around the world met at the Earth Summit in Rio de Janeiro where they developed the United Nations Framework Convention on Climate Change. This convention was the centrepiece for global efforts to address climate change for much of the 1990s.

In December 1997, parties to the UN convention assembled in Kyoto, Japan to establish concrete reduction targets for greenhouse gases. While targets for individual countries differ somewhat, the Kyoto Protocol calls for developed countries to reduce their collective greenhouse-gas emissions by 5.2 per cent from 1990 levels by the period 2008 to 2012.

The Protocol will only become legally binding when it is ratified by at least 55 countries, covering at least 55 per cent of the emissions of countries who have signed on to the agreement.

Since Kyoto, countries have been meeting every year to negotiate the rules for implementation of the Protocol. In July 2001, 183 countries took the Protocol a step further in Bonn, Germany where




Source: International Energy Agency, 1998

they agreed on the basic rules of implementation. Countries are scheduled to meet again this fall in Marakesh, Morocco, to continue to the work toward a final agreement.

## Canada

The federal government is responsible for negotiating Canada's commitments under the Protocol. In 1997, federal negotiators committed Canada to reduce its greenhouse gases by six per cent by the period 2008 to 2012.

In October 2000, the provincial, territorial and federal governments met to discuss Canada's action plan to address climate change. Most jurisdictions, including Ontario, tabled the actions they were taking to cut greenhouse gases. These actions were rolled into the First National Business Plan to address climate change. Canadian jurisdictions will continue to meet to develop a national strategy. In the meantime, provincial, territorial and federal governments also continue to develop and implement new actions.

## United States

The U.S. is the largest contributor to climate change in the world, emitting approximately 25 per cent of global greenhouse gas emissions. Hence, it is vital that the U.S. take part in any global efforts to reduce greenhouse gas emissions and to combat climate change.

In March 2001, U.S. President George W. Bush ruled out his country's participation in the Protocol. President Bush has established a task force to review domestic and international strategies on climate change, and has promised plans for a global alternative to the Protocol. In May, 2001, President Bush released a proposed energy policy. The plan sets the stage for a U.S. climate change plan that would be based on future technology change with a major emphasis on the development of clean-coal technology.

Long-range transport of U.S. air pollution also plays a role in other air quality problems in Canada. For example, more than 50 per cent of Ontario's smog is the result air pollution blown across the border from sources in the U.S. This fact has important consequences for Canada and Ontario in combating air pollution.

## Global action

Canada shares its airshed with our southern neighbours - and in the case of climate change, with the entire world. The effectiveness of our collective effort to address smog, acid rain and climate change depend in large part on actions by many countries. For Ontario, North American countries are particularly important if we are to fight smog, acid rain and climate change. The time to act is now.

# Ontario — Taking Action Now

Ontario continues to be a leader in efforts to improve air quality and address climate change. Ontario supports a national process that will allow Canada to continue fighting climate change. Meanwhile, the province continues to take action now to reduce greenhouse gas emissions. Developing new initiatives and building on existing programs, the Ontario government is committed to ensuring the momentum for clean air actions in the province continues.

### Continuing the momentum:

- Through the $10 million Climate Change Fund, Ontario is developing the next wave of provincial actions to stimulate all sectors - governments, industries, communities and individuals - to search for the most effective ways to reduce greenhouse gas emissions. The fund is providing support to projects across several ministries - involving partners in both the private sector and municipalities.

- Government programs like Drive Clean and Smog Patrol are reducing carbon dioxide emissions right now. Both programs are already doing their part by targeting vehicles that are heavy polluters because of poorly maintained engines, or those that operate without properly functioning emission control equipment. Vehicle exhaust is the source of 29 per cent of all greenhouse gases. By lowering emissions at the tailpipe, Ontario is also cutting smog levels and acid rain precipitation.

  On July 1, 2002, Drive Clean will be expanded to include all municipalities in the so-called "smog zone" - from Windsor to the Quebec border, including the Niagara Peninsula and communities such as Ottawa, Kingston, Cornwall and Chatham-Kent.

  When fully implemented, Drive Clean is expected to cut carbon dioxide emissions from vehicles by 100,000 tonnes annually, which is equivalent to taking 23,000 cars off the road permanently. In the first two years of the program, Drive Clean has cut smog and acid rain-causing emissions from vehicles by 11.5 per cent in the Greater Toronto Area and Hamilton.

- As of May 1, 2001, a new Ontario regulation came into effect requiring the mandatory tracking and public reporting of 358 airborne pollutants from major industrial sectors. The regulation makes Ontario the first jurisdiction in the world to require monitoring and public reporting on emissions of the full suite of greenhouse gases.

  Ontario has required its electricity sector to report on 28 substances - including emissions that cause smog, acid rain and climate change - since May 1, 2000. This regulation has been expanded to include more pollutants, and now covers other large industrial facilities - such as iron and steel manufacturers and petroleum refiners. A range of other industrial, commercial and municipal facilities in Ontario will also have to track and publicly report on the same 358 substances beginning January 1, 2002.

- In March 2001, as part of a strong environmental protection package for the electricity sector, Ontario announced a proposed regulation that would require the Lakeview Generating Station in Mississauga to cease burning coal by April 2005. As well, the government proposed a cap on two key pollutants that cause smog, acid rain and contribute to climate change.

  The end of burning coal at Lakeview would reduce emissions of nitrogen oxides and carbon dioxide by more than 1 million tonnes annually.

As well, emissions of sulphur dioxide and mercury would be totally eliminated. Mercury is a nerve toxin that accumulates in the environment. It is responsible for more than 90 per cent of fish consumption advisories in Ontario's inland lakes.

The proposed caps would drastically reduce current limits on six fossil-fuel plants owned by Ontario Power Generation; the limits on nitrogen oxides would be reduced by 53 per cent, while the cap on sulphur dioxide would be cut by 25 per cent. These measures would ensure the government keeps its promise to match or exceed the tough smog requirements of the U.S. Environmental Protection Agency.

- The government is also exploring market mechanisms and incentives to reduce air pollution. Ontario's proposed system of emissions reduction trading for smog and acid rain-causing emissions is an innovative program that would make polluters pay, while rewarding businesses that are able to reduce their air emissions. The proposed system would include special safeguards to verify and monitor trades in an open market. The end result would be a reduction in the emissions that affect Ontario.

- Ontario's Anti-Smog Action Plan (ASAP) is not only committed to reducing smog-causing emissions by 45 per cent, it is also a climate change fighter. Ozone, while being the main ingredient in smog and the key target of ASAP, is also a greenhouse gas.

- Ontario's updated building code is among the most energy-efficient in Canada. More efficient buildings translates into fewer greenhouse gas emissions from home furnaces and electricity providers.

- Methane is more potent than carbon dioxide in its contribution to the greenhouse effect. In order to reduce methane emissions, Ontario was one of the first jurisdictions in Canada to require the capture of methane emissions from landfills. Again, there are co-benefits to this measure. This initiative also reduces ground-level ozone, a major contributor to smog.

- Government encouragement for new agricultural practices such as conservation tillage – where fields are left undisturbed from harvest to planting – will result in a reduction of agricultural greenhouse gas emissions due to reduced use of farming machinery and the increased capacity to absorb carbon.

- Since forests absorb greenhouse gases from our atmosphere, Ontario is reviewing innovative forest management practices that reduce the risk of tree damage due to fire, insects and disease. The government has taken measures to preserve genetic material in forest seeds to help future work in developing resistant tree species.

- Ontario is getting tough on polluters with its environmental SWAT Team. Introduced in September 2000, SWAT is a highly mobile compliance, inspection and enforcement unit. Its primary focus is on finding companies or individuals that systematically or flagrantly defy the law by engaging in practices that threaten public health and damage the environment.

- To complement its SWAT Team, Ontario also introduced its Toughest Environmental Penalties Act, 2000, which amended and substantially strengthened the Environmental Protection Act, the Pesticide Act and the Ontario Water Resources Act. These amendments increased the maximum fine for a first conviction of a major environmental offence of a corporation from $1 million to $6 million per day, and for a subsequent conviction from $2 million to $10 million per day. For individuals, the maximum fine for a first conviction of a major offence was increased from $100,000 to $4 million per day. Maximum administrative penalties and jail terms were also increased.

- Since more than half of Ontario's smog comes from sources in the U.S., the province strongly supported the U.S. Environmental Protection

Agency's (EPA) efforts to implement tough new emissions limits south of the border. The Ontario government successfully intervened in a U.S. Supreme Court decision that will help reduce pollution coming into Ontario from the U.S. Once the EPA's new regulation comes into effect, Ontario's levels of smog-causing ozone could be reduced by up to 20 per cent.

## Increasing momentum - Innovative new ways to combat climate change

- In February 2001, the Ontario government accepted a report entitled, *Managing the Environment: A Review of Best Practices*, signaling a fundamental shift in the way Ontario will go about protecting the environment in the future. The government is committed to make the environment a broad responsibility across all ministries and beyond, to involve community groups, businesses, academics and the public. The government has also created a new Cabinet Environmental Policy Committee and a new Associate Deputy Minister to implement Ontario's bold new 21st century vision of environmental improvement.

- With the launch of Ontario's all-party committee on alternative fuel sources on August 27, 2001, the province began studying ways to further diversify energy supplies, improve energy efficiency and conservation, and enhance the province's technology base. The committee's work is yet another step toward reducing emissions, including those that contribute to climate change.

- Opening Ontario's electricity market to competition will enable renewable energy sources and high efficiency gas-fired generation to be brought on-stream. Consumers will be able to choose electricity from sources that produce the lowest greenhouse gas emissions.

## Transportation - The road to improved air quality

- New drivers in Ontario will receive revised driver education materials that include air quality and climate change messages, entrenching fuel-efficient driving practices from the start.

- Ontario is preparing best management practices to improve the fuel-efficiency and emissions performance of vehicle fleets in the public and private sectors.

- The government is re-iterating its commitment to tax policies that favour alternative fuels, a policy that will continue to increase the public appeal of cleaner-burning fuels.

- The report entitled Transit Supportive Land-Use Planning Guide provides guidelines for municipal transportation, with a focus on improving local transportation and reducing emissions.

- Even small details count: Intelligent transportation systems such as the COMPASS program and the 407 Express Toll Route play an important role by reducing traffic congestion and, therefore, vehicle emission. COMPASS is a highway traffic control system developed by the Ontario Ministry of Transportation. It informs drivers of the latest conditions through changeable message signs, allowing more efficient travel time and lower emissions.

## Education - Instilling the message in our youth

- The government is reaching out to Ontario children about the role our forests, lakes and soils have in improving air quality and reducing the risk of climate change. Awareness campaigns like the new Kids in the Park Climate Change Cards and the Eastern Ontario Parks Tree Voucher are laying the groundwork for future programs in Ontario provincial parks.

- Ontario's Partners in Air program has been expanded to include lesson plans on climate change. Partners in Air is a hands-on classroom initiative that brings together corporate sponsors, the Ministry of the Environment and high schools across Ontario to give students an opportunity to study air quality and discuss their findings with students and scientists everywhere via the Internet.

### Land and Resource Management - Toward smarter growth

- Ontario is studying and developing policy options to make tree planting an important part of the province's air quality strategy. Trees clean our air of many pollutants, including carbon dioxide, an important greenhouse gas.

- A partnership of Ontario ministries will develop and provide technical manuals and establish best management practices that give Ontario municipalities the necessary information to reduce pollutants through urban forestry planning and improved day-to-day operations. This initiative will be backed by a study that approximates – for the first time in North America – the impact of urban roof top gardens on greenhouse gas reduction.

### What are Ontario businesses doing about air quality and climate change?

In all its air quality and climate change actions, the Ontario government has been able to build on a strong foundation of voluntary commitments by businesses, municipalities and individuals. The following are selected examples of Ontario initiatives launched outside of government.

- More than 270 Ontario businesses and organizations have joined the Voluntary Challenge and Registry (VCR). This government-private sector initiative has been encouraging voluntary reductions of greenhouse gases since 1995.

- An Industrial Guidelines Supplement provides advice to companies on how to use environmental management systems such as the ISO 14000 environmental management quality standards to identify and manage climate change impacts. Developed by the International Standards Organization, ISO 14000 is an international standard for environmental management in business.

- Ontario Power Generation (OPG) made a voluntary commitment in 1995 to stabalize its net greenhouse gas emissions at 1990 levels in 2000. This target was met through improvements to energy efficiency and by applying emission reduction credits. OPG is committed to stabalizing its greenhouse gas emissions at 1990 levels beyond 2000. In 2000, OPG's total emissions of nitrogen oxides and sulphur dioxide were almost 60 per cent lower than in 1984. However the company's fossil stations produced almost 14 per cent more electricity in 2000 compared to 1984. As well, OPG is leading the way in alternative fuel sources. On August 29, 2001, OPG flicked the switch on North America's largest wind turbine that will produce enough clean power to supply 600 homes a year.

- Nortel Networks of Brampton reduced energy consumption in its Canadian operations by 14 per cent between 1997 and 2000, resulting in a reduction of almost 4,000 kilotonnes of green house gases. Nortel also developed a Green Commute program in Ottawa, the most comprehensive employer based transportation demand program in Canada. Green Commute facilitates carpooling and encourages other environmentally beneficial commuting modes like taking transit, cycling and telecommuting.

- Noranda Inc., a Toronto-based mining and metals company with operations in Quebec and New Brunswick, has reduced greenhouse gas emission intensity through process improvement, better capacity utilization, increased recycling, and development and deployment of innovative new process technologies. Those actions have

enabloed Noranda to mprove air quality and reduce greenhouse gas emissions while increas ing production at its existing metallugical operations.

- The Stelco group, headquartered in Hamilton, has implemented a series of equipment upgrades and energy efficiency improvements to achieve a carbon dioxide intensity reduction of an estimated 15 per cent below 1990 levels.

- Sunoco, a division of Suncor, has a major refinery in Sarnia and more than 300 retail sites throughout Ontario. Sunoco has set an ambitious performance target to reduce carbon dioxide emissions per unit of production from its refinery by 31 per cent by 2008. Sunoco is also involved in a number of renewable energy businesses including windfarms and ethanol fuel. Sunoco's ethanol-in-gasoline program is estimated to reduce carbon dioxide emissions at an annual rate of 130,000 tonnes. The company also provides support for Queen's University's BIOCAP program to identify and test greenhouse gas reduction strategies.

- The London Life Insurance Company achieved a 24 per cent reduction in greenhouse gas emissions through energy efficiency and waste recycling and reduction between 1993 and 1999. Energy efficiency actions included building equipment upgrades, and improvements in computer efficiency and road fleet management to reduce fuel consumption.

- General Motors of Canada Limited, with head office and operations in Oshawa, reduced its total energy consumption by 36 per cent during the period 1990 to 1999, while carbon dioxide emissions were reduced 42 per cent. During the same period, the company's projected energy consumption per vehicle produced was reduced by 30 per cent for car assembly and by 22 per cent for truck assembly. General Motors also employs a comprehensive Environmental Management System to continually reduce its impact on the environment.

## What are Ontario Municipalities doing about air quality and climate change?

- Richmond Hill has implemented a clean air action plan. The action plan is designed to reduce emissions from municipal facilities and services and promote similar action by local businesses and other municipalities. The plan has brought about immediate changes to day-to-day municipal practices and spawned programs including a smog alert advisory plan, travel reduction strategies, and marketing and education programs.

- Barrie is developing a community energy action plan on municipal operations. The city is monitoring its operations and assessing its energy costs to continually find ways to reduce air pollution and improve energy efficiency.

- Sarnia and Lambton County are developing an educational program on air quality and climate change issues. The project will endeavor to change public misconceptions regarding the contribution of individual human sources and health implications of air pollution. The project will also emphasize the importance of individual responsibility in taking action to improve air quality and promote activities that reduce green house gas emissions, such as using public transportation, car-pooling and undertaking energy conservation initiatives.

- Hamilton initiated the Hamilton-Wentworth Air Quality Initiative to assess local air quality and set new priorities in air quality management. Since its inception, a committee known as Clean Air Hamilton was formed to promote the initiative and implement recommendations that improve air quality. In November 2000, Clean Air Hamilton along with the City of Hamilton's VISION 2020 were awarded a prestigious international award for their plans to improve air quality and adopt sustainable development strategies. The 2000 Dubai International Award for Best Practices to Improve the Living Environment recognizes that Clean Air Ontario

and VISION 2020 are among the world's top strategies for improving a community's environment, economy, society and overall quality of life.

- Sudbury has developed a Strategic Energy Plan to provide benchmarks for existing carbon dioxide emissions from regional facilities and predict future emissions reductions as a result of energy retrofit activities. Results have shown that the municipality will reduce its annual municipal energy bill by 28 per cent and save almost $1 million through the retrofitting of its buildings to improve energy efficiency. The results also showed that the cost of measures to reduce energy use could be recovered from saving on the municipal energy bill over a seven-year period. The City of Sudbury is well on its way to reaching these savings.

- The Regional Municipality of Halton introduced a public sector smog response plan. The plan includes an initiative to increase public awareness of the environmental and health effects of smog. As well, the municipality will develop procedures for both private and public organizations to follow before and during smog alerts. It is anticipated that the measures taken will lead to a reduction in greenhouse gases and improve air quality.

- The City of Peterborough supports Peterborough Green-Up's Home Check Up program, which offers household evaluations of energy, waste and water use and recommends building improvements and lifestyle changes to use resources more efficiently. Improving energy efficiency not only saves people money, but it also cuts down on air pollution that causes smog, acid rain and climate change.

# Improving the Air We All Share - What can YOU do?

Since most scientists agree that future changes to our climate would at least in part be the result of human actions, we all share the responsibility of doing everything we can to keep our climate healthy.

While the Ontario government has taken a leading role in reducing air pollution and the risk of climate change through focused initiatives, every single person has a role to play in cleaning up the air we all share. Air quality is everybody's business, and every little action counts.

### Be car-smart!

In order to cut down on the many harmful emissions that come from our tailpipes, try using public transit whenever possible. Organize a car pool, walk or take your bicycle to work. It is also very important to keep your vehicle well-tuned. Emissions from a poorly maintained car can be up to 30 times higher than those for a car that runs well. When buying a new car, emphasize fuel efficiency.

### Be energy-smart!

While approximately 75 per cent of Ontario's electricity comes from hydroelectric and nuclear power that produce minimal air pollution, the other quarter is generated by burning coal, natural gas and oil. Ontario power generators rely on fossil plants for peak periods of energy use and for some of our basic energy needs. Our fossil fuel power plants produce a number of harmful emissions, chief among them the greenhouse gases sulphur dioxide and nitrogen oxides. These gases are also two of the main culprits in the formation of smog and acid rain.

In order to reduce these emissions, we all need to be energy-smart. Little actions can have large benefits, like making it a habit to switch off lights you aren't using. Turn down the air conditioner or the heater and try to upgrade your home's energy efficiency. An example may help to show how small baby steps can achieve significant clean-air benefits: if only five gas-heated homes lower their thermostat by one degree Celsius, our air is spared more than one tonne of carbon dioxide each year. Think about the benefits of such a seemingly small action if every household in Ontario were to do the same thing.

### Be product-smart!

When purchasing products for everyday use, consider their impact on air quality. Avoid using aerosol sprays and cleaners, oil-based paints and other chemical products that release volatile organic compounds (VOCs), chemicals that readily evaporate and contribute to smog. When buying or replacing appliances, insist on energy efficiency. A device as simple and inexpensive as a low-flow shower head, installed in seven homes, can reduce carbon dioxide pollution by almost a tonne every year.

### Sweat the small stuff!

In many Ontario households, the car isn't the only machine powered by a combustion engine. A gasoline-powered lawnmower run for an hour puts out about the same amount of smog-forming emissions as 40 new automobiles driven for the same amount of time. And trimmers and chainsaws create even more air pollution. So "sweat the small stuff" and try to find alternatives to gasoline-powered garden equipment like mowers, trimmers, leaf blowers or chainsaws.

Finding solutions to the combined challenges of air pollution and climate change is everybody's business. The Ontario government continues to lay the foundation for a greener future through initiatives that are targeting a broad base of sectors.

Many actions already under way are showing results, but a lot more needs to be done. The Ontario government is calling on every business, every organization, every municipality and every individual to join the battle against air pollution and climate change.

# Next steps

Ontario's road to a greener future will neither be straight nor without potholes. There are no quick fixes. Even the current action plan is only a starting point. And there will be many factors to consider - environmental, as well as economic and social.

Over time, we will need to adjust our emission reduction strategies, explore new ideas and be ready to do more to improve air quality and address climate change. The air pollution and climate change prevention calendar is marked in decades, not years.

Arriving at effective solutions will take research, constant fine-tuning, and most of all – time. Ontario laid the foundation for its future actions by establishing its mandatory monitoring and public reporting regulation. With reliable emissions inventories and reporting systems firmly in place we are now better equipped to assess air pollution levels. This allows the province to plan future initiatives that will bring about the desired technology and lifestyle changes we need to ensure our environment is safeguarded for generations to come.

It is clear that everyone has a responsibility to reduce emissions that cause smog, acid rain and climate change. Even though Ontario emits only a tiny fraction of global greenhouse gases, we will continue to do our share to contribute to the world's fight to reduce the risk of climate change. The same goes for every individual, business, industry, municipality and country around the world.

Regardless of any international agreemeents which may be reached, Ontario will continue to do its part, by building on the measures we are currently taking for the protection of the environment. At the same time, Ontario will continue to encourage the federal government to work with the provinces and territories in developing a national strategy as soon as possible, so that each government knows what to plan for and what we all can do to reduce the impact of global climate change.

**Ministry of the Environment**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