

# Climate Change

## What can we do now?

1. Get informed. A good place to start is

<http://www.davidsuzuki.org/what-you-can-do/reduce-your-carbon-footprint/four-places-to-cut-your-carbon/>.

You will also find a good explanation of how climate change happens at this site.

2. **Consider the energy use in your home, work-places, churches** and wherever you spend your time. Research ways to save energy in heating and lighting and appliance use. Think about your purchases. *Everything you buy uses energy to produce it, transport it, and dispose of it after you are finished with it.*

✓ Do you buy local products and foods, or those imported from across the world.

✓ Do you buy “dollar store” bargains that you use once and then discard?

✓ Do you look for minimal packaging on your purchases, so there is less garbage to transport and degrade in landfill.

✓ Do you look for food which is produced in a sustainable way, for example, not destroying sensitive environments to produce coffee, cocoa or beef?

✓ Do you buy energy efficient cars, lights, appliances?

✓ Do you use a clothes line to dry your clothes?

3. **Think about how you travel.**

✓ Do you walk, bike, carpool, use public transportation whenever possible?

✓ Do you plan your errands so that one trip will accomplish several things?

✓ Do you plan vacations close to home sometimes?

#### 4. **Make your voice heard.**

- ✓ Speak with your family, friends, co-workers and community leaders to find ways to make your living/working spaces more energy efficient.
- ✓ Contact "The Right Honourable Justin Trudeau" <[justin.trudeau@parl.gc.ca](mailto:justin.trudeau@parl.gc.ca)> "The Honourable Catherine McKenna" [catherine.mckenna@parl.gc.ca](mailto:catherine.mckenna@parl.gc.ca) or your local MP

## CLIMATE CHANGE

- 97% of climate scientists agree that climate warming trends (1 degree Fahrenheit) over the past century are very likely due to human activities.
- This change is proceeding at a rate unprecedented in the past 1,300 years. The rate in the last decade is nearly double that of the last century.
- 10 of the warmest years have occurred in the last 12 years.
- Earth's climate record, preserved in tree rings, ice cores and coral reefs show that the global average temperature is stable over long periods of time. A few hundredths of a degree from year to year.
- Small changes in temperature correspond to enormous changes in environment. Example, at the end of the last Ice age, when the NE US was covered by more than 3,000 feet of ice, average temp. were only 5-9 degrees cooler than today.
- Scientists have high confidence that global temp will continue to rise for decades to come, largely due to greenhouse gases. Projected temp rise of 2.5-10 degrees Fahrenheit over the next century.
- The plus-two threshold matters because at that point the warming we have already caused will trigger natural feedbacks that we cannot control: the loss of Arctic sea ice, the melting of permafrost, and immense releases of CO<sub>2</sub> from the warming oceans. After plus-two we will no longer be able to stop the warming by ending our own greenhouse gas emissions.
- Net annual costs will increase over time as global temp increases.

- Effects already: glaciers have shrunk(almost everywhere around the world), ice on rivers and lakes is breaking up earlier, amount of spring snow cover over the past decades and it's melting earlier, plant and animal ranges have shifted and trees are flowering sooner. We are seeing loss of sea ice, accelerated sea level rise (the rate in the last decade is nearly double that of the last 100 yrs) and longer, more intense heat waves and increasing numbers of intense rainfall events. Intensity, frequency and duration of Atlantic hurricanes, as well as the frequency of the strongest(category 4 & 5), have all increased since the 1980's. Since the beginning of the Industrial Revolution, the acidity of surface ocean waters has increased by about 30%. It's a result of humans emitting more CO<sub>2</sub> into the atmosphere and hence more being absorbed into the oceans. Coral reefs are at risk.
- By the end of this century what have been once-in-20-year extreme days (1 day events) are projected to occur every 2 or 3 years over most of the US. These droughts and heat waves (periods of abnormally hot weather lasting days to weeks) are projected to become more intense and cold waves less intense everywhere.
- Global sea level has risen by about 8 inches since the 1800's, projected to rise another 1-4 feet by 2100. Storm surge and high tides could combine with sea level rise and land subsidence to further increase flooding. Ocean waters will continue to warm and sea levels rise for many centuries at rates equal to or higher than that of the current century.
- These changes will have an effect on: infrastructure, agriculture, fisheries, ecosystems, wildfire, insect outbreaks, economies, tree disease causing widespread die-off , forestry, health, transportation, air and water quality, availability of water, energy etc.
- The cause of these problems – Greenhouse Gases. Greenhouse effect is warming that results when the atmosphere traps heat radiating from Earth toward space.
- The gases are: **Water vapour** (the most abundant greenhouse gas but it acts as a feedback to the climate. Water vapour increases as the atmosphere warms, but so does the possibility of clouds and precipitation), **CO<sub>2</sub>** (minor but important component of the atmosphere. Humans have increased this concentration by a third since the Industrial Revolution began. It is the most important of the long-lived “forcing” chemicals of climate change. Causes are deforestation, land use changes and burning of fossil fuels), **Methane** (hydrocarbon produced by decomposition of wastes in landfills, agriculture, especially rice cultivation, as well as ruminant digestion and manure

management. It is less abundant in the atmosphere but on a molecule-for-molecule basis, is far more active than CO<sub>2</sub>.), **Nitrous Oxide** (powerful greenhouse gas produced by soil cultivation practices, especially commercial and organic fertilizers, fossil fuel combustion, nitric acid production and biomass burning.) and **Chlorofluorocarbons or CFC's** (now largely regulated in production and release due to their destruction of the ozone layer.)

- Provincial ministers met with PM in Vancouver in March to launch climate talks that will lay the groundwork for Canada to meet its obligations under the global Paris climate agreement.
- We must adapt (transition off fossil fuel reliance) and mitigate (deal with the unavoidable climate impacts)
- Stefan Rahmstorf of the Potsdam Institute of Climate Impact Research “We’re in a kind of climate emergency now”.

Information from NASA web-site on climate change and Gwynne Dyer article on Non-linear climate emergency.