



Be a CLIMATE HERO!

The Okanagan needs YOU...

Climate change is affecting the Okanagan in various ways – from flooding, to repeated droughts, to fires. But we have solutions! It is time to put those solutions into action for a secure water future! We all have a voice and the power to make a positive impact!

As part of Canada Water Week 2019, Okanagan WaterWise invited school classes and individuals throughout the Okanagan, from Kindergarten to Grade 12, to be Climate Heroes and encourage others to get involved. However, we need heroes year-round! JOIN US!

Within these pages you will learn more about climate change and how we can turn the tide and make a difference.

Looking for information about climate change?

BACKGROUND

Life on Earth depends on energy coming from the Sun. About half the light reaching Earth's atmosphere passes through the air and clouds to the surface, where it is absorbed and then radiated upward in the form of infrared heat. (See illustration next page.)

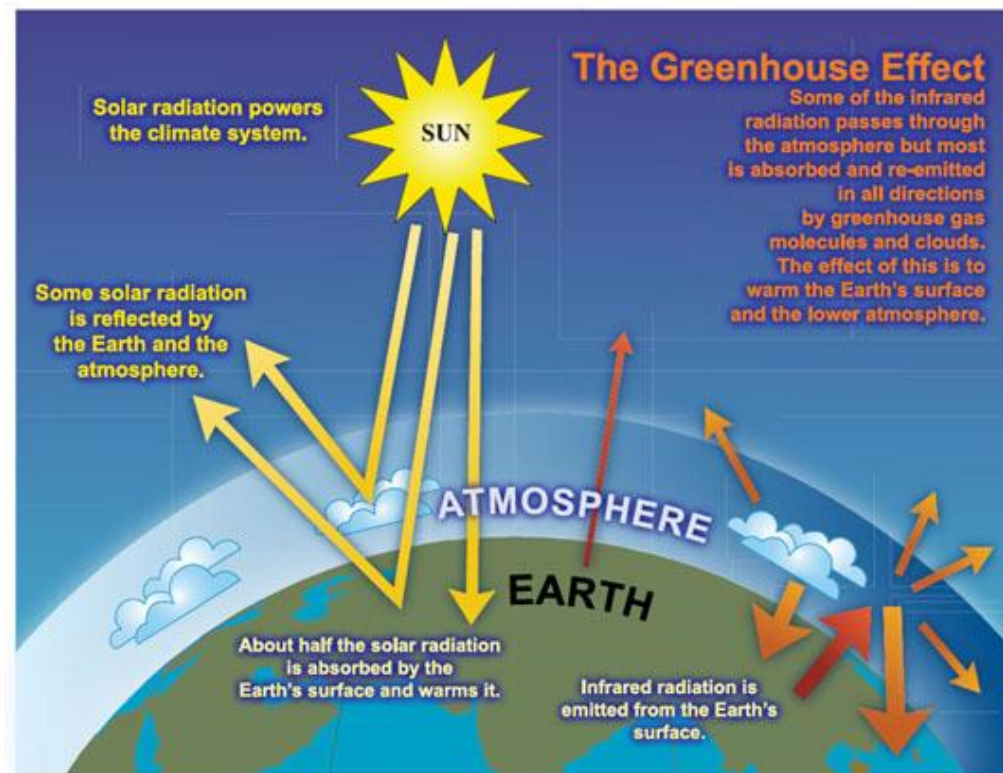
Various gases within the Earth's atmosphere play an important role in insulating and warming the Earth's surface. In our atmosphere, **water vapour**, **carbon dioxide**, **methane** and **nitrous oxide**, are referred to as **greenhouse gases (GHG)**. These gases absorb most of the heat energy emitted from the warmed surfaces of the Earth and re-emit it in all directions, including back towards earth. This process of warming is often referred to as the **greenhouse effect** because the atmosphere works like a blanket surrounding the Earth and trapping heat.

This is a naturally occurring process that is essential for life on Earth. Without these greenhouse gases, the light and warmth from the sun would reach the Earth and then be reflected back and lost into space. The average temperature on Earth would be around -18 degrees Celsius instead of the current 15 degrees C which is necessary to support life.

However, when the amount of GHG in the atmosphere increases, more heat is trapped and the Earth's temperature rises, which in turn alters the world's climate. Most climate scientists agree



that the main cause of the current global warming trend is human enhancement of the "greenhouse effect" by increased emissions of GHG—especially CO₂.



(from <https://nems.nih.gov/programs/Pages/greenhouse.aspx>)

Carbon dioxide has contributed most to climate change because it remains in the atmosphere longer than any other GHG and is abundant. Since carbon dioxide plays a critical role in regulating Earth's temperature, understanding where carbon is stored and how it is captured and released – naturally and by human activity – is essential to understanding human-induced climate change.

(adapted from <https://climate.nasa.gov/causes/> and <https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/cars-light-trucks/idling/4415>)

Human-caused greenhouse gas emissions:

On Earth, human activities are significantly altering the natural greenhouse. Over the last century, we have increased our demand for the burning of fossil fuels such as coal and oil. When burned, fossil fuels release carbon dioxide into the atmosphere. The burning of fossil fuels and deforestation have increased the concentration of carbon dioxide (CO₂) in our atmosphere by 42% since the beginning of the industrial era. To a lesser extent, the clearing of land for agriculture, industry, and other human activities has also increased concentrations of GHG.

The increase in GHG in the atmosphere has disturbed the atmospheric balance and we are now seeing some of the effects, such as global warming by 1.0 degrees Celsius and more common extreme weather events.

(adapted from <https://climate.nasa.gov/causes/> and <https://davidsuzuki.org/what-you-can-do/what-is-climate-change/>)

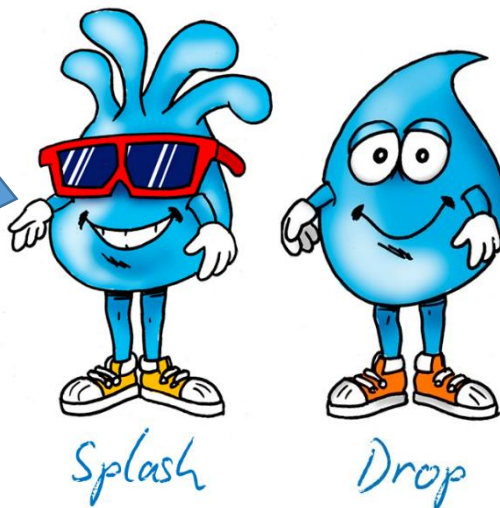
Individual greenhouse gas emissions:

As individuals, we produce GHG emissions from burning gasoline when we drive or fly, burning oil or gas for home heating, or using electricity generated from coal, natural gas, and oil. The production of many of the items we use daily, such as clothes and electronics, also produce GHG emissions. Individual GHG emissions vary depending on a person's location, habits, and personal choices.

For example:

- The quantity of greenhouse gas emissions from your home electricity use depends on the types of fuel your power plant uses to generate the electricity and the amount that you use.
- The quantity of greenhouse gases emitted from your furnace and boiler depends on the efficiency of these items, the size and insulation of your house, and the amount and type of fuel used.
- The quantity of emissions from a car or truck depends on how much a person drives, the vehicle's fuel efficiency, and how a person drives (e.g., the amount of time spent idling).
- The more recycling and composting you do, the less waste is sent to the landfills and the less landfill GHG emissions produced.
- The less new products you consume, the fewer GHG emissions result from processing of raw materials.

In the Okanagan, climate change has increased our vulnerability to flood, repeated droughts, water pollution, and forest fires.



This is why we need YOU—Climate Heroes—to join us in “turning the tide” and protecting our water!

Turning the tide on climate change - Reducing our emissions

(adapted from: <http://www.daidsuzuki.org/what-you-can-do/food-and-our-planet/food-and-climate-change/>)

There are several habits we can adopt that will have a “ripple effect,” helping reduce our individual GHG emissions, and protect our water!



Ripple

1. Change your transportation habits – carbon emissions from the use of gas-powered vehicles is one of the biggest contributors to climate change

- Walk or bike whenever possible. Not only will you reduce your carbon footprint, but your overall level of health will improve and you will save money on gasoline and parking.
- Take public transit or carpool whenever possible.
- If you need to drive, plan ahead and make plans to limit your kilometres.

Eliminate unnecessary idling. Avoid drive-throughs – go inside instead. Idling just 10 seconds wastes more gas and releases more GHG emissions than restarting the engine. (<https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/cars-light-trucks/idling/4415>)

2. Change how you use water

In the Okanagan, 55% of all water used is used by agriculture, but this feeds our community and a lot of work has been done to try and reduce water waste. The second largest use of water - 24% - is residential landscapes. This is where individuals can have the greatest impact on water use. The third largest use of water is indoors at 7%. (Learn more about outdoor water conservation in the Okanagan at www.MakeWaterWork.ca.)

- Water outdoor plants and lawn during the coolest part of the day, between dusk and dawn to prevent evaporation.
- Water plants, not pavement.
- When mowing the lawn, leave grass clippings as mulch to hold the water you use.
- Change out thirsty lawn with drought-tolerant turf and/or native and low-water variety plants.
- Turn off water while brushing your teeth.
- Take a speedy shower – keep it within 5 minutes. Turn off the water while soaping up.
- Treating and transporting water requires energy. When you reduce your water use, you are reducing how much energy is needed to get clean water to your tap. This, in turn, reduces carbon emissions.

3. Protect our water from pollution

As we deal with flooding and drought, the quality of our water may be affected. Therefore, we need to keep all our waters as clean as possible since we depend on it for drinking water and recreational purposes. The Okanagan is also one of the most biodiverse regions in Canada with many endangered species. Conserving biodiversity requires healthy water quality for wildlife.

- Storm drains carry storm water and everything that enters them directly into our streams, rivers and lakes. Streams provide 85% of our wildlife species with habitat, plus valuable spawning and rearing areas for fish. To protect our water:
 - Keep storm drains clean. Use rain water for irrigation. Collect pet waste and dispose it in the garbage. Wash your car at a carwash to avoid pollutants from entering our streams and lakes through storm drains.
 - Find more tips at [Okanagan WaterWise in your yard](#).
- At home, be aware of what you are flushing down the toilet or sinks. Wastewater treatment plants cannot remove all contaminants from the waste water and as a result, some contaminants may end up in the environment.
 - Do not flush medications, oil or grease, or other household hazardous waste, take them to a pharmacy or waste depot for proper disposal.
 - Find more tips at [Okanagan WaterWise in your home](#).
- Participate in the Yellow Fish Road Program™: Participants of the program paint yellow fish near storm drains to alert residents and visitors that anything flowing into the drain is going directly to our streams and lakes without being treated.
 - For more information on the program see [Trout Unlimited Canada](#) or the [Kelowna Yellow Fish Road Program](#)
- Participate in the Adopt-a-Stream Program. The program encourages residents and organizations to make a commitment to our environment and gives groups an opportunity to help keep streams healthy by picking up litter and debris and removing noxious weeds.
 - [Kelowna program](#)
 - [Regional District of the North Okanagan program](#)

4. Adopt energy-saving habits

- Make it a habit to turn off the lights as you leave a room.
- Also, replace standard light bulbs with energy-efficient compact fluorescent bulbs.
- Turn off your computer and unplug electronics when they are not in use.

5. Refuse, Reduce, Reuse, Recycle, and Rot daily

- Everything – from food, to clothes, to technology – requires water and energy to produce, and therefore GHGs. The most important of these Rs is REFUSE. Think before you buy or accept something – is it a need, or a want?
- Say no to disposables, packaged foods, and freebies or “bargains”.
- REDUCE the amount of things you buy, or buy used items which don’t require any more energy to create.

- Use REUSABLES whenever possible (e.g. reusable shopping bags, containers, towels, drinking containers, etc.)
- RECYCLE or compost (ROT).

6. Plant a tree that is indigenous and/or WaterWise to the Okanagan Valley

Trees not only provide shade; they also soak up carbon from the atmosphere.

To conserve water, ensure that your plants are suitable to the Okanagan climate and switch to xeriscaping when possible.

- Find a WaterWise plant list [here](#). Looking for something more extensive? Check out the [Okanagan Xeriscape Association Plant Database](#).
- If in Kelowna, participate in the [NeighbourWoods program](#): a residential planning initiative to encourage citizens to grow and preserve Kelowna's healthy neighbourhoods' urban forests. The program aims to overcome obstacles to urban forests such as pine beetle, wildfire or development, while providing many benefits such as absorbing carbon dioxide, improving air quality and conserving water.

7. Reduce the amount of meat you eat

- It takes a lot of energy to grow animals for food. For example, it takes about 5-7 kg of grain to produce 1 kg of beef. Each of those kilograms of grain takes a lot of energy and water to produce, process, and transport.
- Because we raise so many animals to eat, they produce quite a large volume of greenhouse gases (such as methane and nitrous oxide). The United Nations Food and Agriculture Organization estimates that livestock production is responsible for 18% of greenhouse gases.

8. Eat food that was grown without synthetic fertilizers

- Synthetic pesticides and fertilizers are widely used in agriculture, and are often made from fossil fuels.
- Manufacturing and transporting these chemicals uses significant quantities of energy and produces greenhouse gases.

9. Buy food grown locally or plant your own vegetable garden

- The average meal travels 1200 km from the farm to your plate.
- Food that is grown closer to home will have fewer transportation emissions associated with it (it will also be fresher and you will be supporting local farmers to make a living).

10. SPREAD THE WORD!

Communication and collaboration between residents, businesses and government is essential with everyone working together for a safe, sustainable water future.

Additional resources:

[Okanagan WaterWise website](#) - Learn more about Okanagan water, find project ideas and resources

["Climate Change & Water in the Okanagan" infographic](#) - Learn more about how climate change will affect water in the Okanagan and how we can respond.

[Young Voices for the Planet](#) - Learn about projects to tackle climate change led by children and youth around the world.