



Global Impacts of Climate Change

We've been learning that climate change is warming up and changing this planet we call home. We know that temperatures in the northern areas of the world will climb faster than temperatures in other areas of the planet.

However, as the climate is changing everywhere, people around the world will have to deal with many of the same types of impacts that northerners are already starting to tackle.

For example, worldwide, new plants or wildlife species will appear in some areas and old ones may disappear if the species can't handle the new climate. Weather patterns will change. Lakes and rivers may lose water as warmer temperatures cause more water to evaporate.

People in other countries may also experience some impacts that northerners won't have to deal with because of different environments or ways of life.

To learn what climate change will mean for people in other areas of the world, read on!

Rising Waters, Disappearing Lands

Thirty of the world's biggest cities – cities like London and New York – are very close to sea level. This means they are built on land that is almost at the same level as the surface of the ocean. Hundreds of islands in the world are also just above sea level – the land on some islands only rises a few metres above the place where the waves hit at high tide.

Now imagine living on one of these islands or coastal towns elsewhere in the world. Maybe you have a beachfront home. Or maybe you have a business that makes money from the tourists that come to sunbathe and play on the beaches in your area. Or maybe you have a family farm in a low river delta that is just not much higher than the ocean shore.



What makes the sea rise?

Can you think of the reasons the water level of the oceans might rise? One reason is that glaciers and the polar ice caps are melting more because temperatures are increasing. This means more freshwater is flowing into the oceans.

The other reason is that most things expand in size as they heat up. Warm water simply takes up more room than cold water. So, as climate change is warming up our oceans, the oceans will expand in size and the levels will rise.



Then imagine learning that climate change is supposed to make sea levels rise by up to 88 centimetres in the next 100 years.

Tens of millions of people who live in these low-lying areas near the ocean will have to start packing their bags and moving to higher ground. For some island people, this might mean moving to a whole new island or country as their entire island is expected to disappear under water!

Some places are already building huge barriers to keep the ocean from washing away their shorelines. But the high seas will likely still get around many of these barriers and many low-lying areas will get more flooding in the future.

These floods will carry salt water into areas that just have fresh water now. As many people farm in these low areas, the occasional incoming salt water could harm farm crops because many plants can't grow in salty soil. The salt water will also affect other plants and animals that live in these low-lying areas.



Wet Times

In some parts of the world, climate change is expected to increase the amount of rain and snow. Much of the Arctic, for example, will likely get more rain and snow. Some of the areas of the world that are expected to get a lot more rain – or get the rain in more intense downpours – will likely see an increase in the number of floods and landslides. Drastic events like floods and landslides can wipe out towns, killing people and damaging homes, property, crops and ecosystems. This will result in major social, environmental and economic impacts in these areas.

Dry Times

Other areas of the world will get less rain than they used to because of climate change. In Africa, there have already been more droughts (long periods without any rain). When it gets really dry, crops won't grow. Cattle and other farm animals can die from thirst. This means there is less for people to eat. Many will starve and millions will move to other areas if the droughts continue. It will be tough for other countries to feed and house so many new people.



As things get drier, deserts and grasslands are expected to expand in many places around the world – at the expense of forests. Extended dry periods and more heat can also have some long-term impacts on streams and rivers. For example, Mount Kilimanjaro, Africa’s tallest mountain, now has snow on it all year round. Every year, some of the snow melts and provides water for the nearby streams and rivers. Normally, this melted snow is replaced by more snowfall in the cooler times of the year.



However, increased temperatures from climate change have caused the snow on Kilimanjaro to melt faster than usual. Because climate change has also made this area drier, there is not enough new snow to replace what melts each year. So the ice field is shrinking. The ice field at the top of Kilimanjaro is 82% smaller than it was in 1912.

If the ice field completely disappears, there will be no more snow and ice to melt year round so the streams and rivers that flow from this mountain will also disappear – for at least part of the year.

The loss of snow, and water, could also happen in other areas of the world, such as the Himalayan Mountain region of Asia. The loss of snow on all of these peaks – whether in Africa or in Asia – would affect a lot of the people and wildlife that live in these mountain areas. There would be less drinking water. There would also be less water to help farm crops and other plants grow. This would create food shortages.

Some dry areas of the world already have a shortage of fresh water for drinking and farming. Unfortunately, the warmer temperatures caused by climate change will make even more water in the lakes and rivers evaporate (turn into vapour and rise into the atmosphere). In countries where there is already a shortage of water, a combination of increased evaporation and less rainfall will mean the shortage and quality of water will get worse.

We all need water to survive. If it starts to disappear in some regions, people in these areas could start fighting over what is left. This would be a very sad impact of climate change.



More Bugs!

Some things grow much better in warm weather... including insects and diseases!

Tropical diseases like malaria and yellow fever might spread northwards with warmer temperatures, into places that are currently too cold for these diseases to survive.

Some of the diseases, insects and parasites that will spread will harm humans. Other types of diseases and insects can harm farm crops and animals. If these crops and animals are damaged or destroyed, this will make it tough for some people in the world to put food on their table.

New insects and diseases can also affect forests, wildlife and fish. If these things in the natural environment are negatively affected, they can then negatively impact people. For example, forestry companies may not be able to log trees that have been damaged by insects. Hunters and trappers may find that the animals they kill are too full of parasites or too sick to eat or sell.

So even if the spread of insects, parasites and diseases doesn't directly hurt people, the new pests and diseases might hurt the things people eat or from which they make a living.

Environmental refugees

In 1998, more than 25 million people had to leave their homes because of floods, drought, deforestation or other environmental problems! That is a lot of people on the move! This was the first time in recent history that more people in the world left their homes because of environmental disasters than because of wars or other conflicts.

Most of these environmental disasters (such as floods, droughts, or other extreme weather events) may be linked to the changing climate.

Losing Life in our Oceans

Coral reefs

Coral is a living organism that grows and dies naturally. A lot of coral in one place is called a "reef" and these reefs are like large cities, full of diverse life. The world's coral reefs are home to over half of all of the species that live in the ocean! The coral is a hugely important ocean habitat.

Unfortunately, these coral reefs are doing more dying than living these days. The reefs are dying because the coral can't survive in the warmer ocean water that climate change is causing, and because of increased pollution.



When the coral dies, it can get eroded and washed away by waves. When this happens, the fish and other species that live in these coral reefs lose their habitat (their home) which means their populations will likely go down.

Phytoplankton

Other important things found in the ocean are the small plant-like organisms called algae or phytoplankton. Like plants on land, phytoplankton capture sunlight and grow using photosynthesis and nutrients in their surrounding environment.

Phytoplankton are also an important food source for many fish and other species in the ocean.

However, phytoplankton can die off if ocean water warms up too much (*see Backgrounder 3*). If phytoplankton disappear, some of the other species in the ocean may starve.

For example, phytoplankton in the ocean near South America have died off when the warm ocean currents of El Niño mixed with cooler water in this area (*see Backgrounder 4*). When this happened, the fish in the area that ate the phytoplankton also decreased in numbers. Then the seals that ate the fish that ate the phytoplankton also decreased in numbers!

Oceans cover 70% of the earth and provide a source of food for millions and millions of people in the world. As the marine life in the water is affected by climate change, people around the world who rely on the oceans for their dinners will also be affected. So this is a serious global issue!



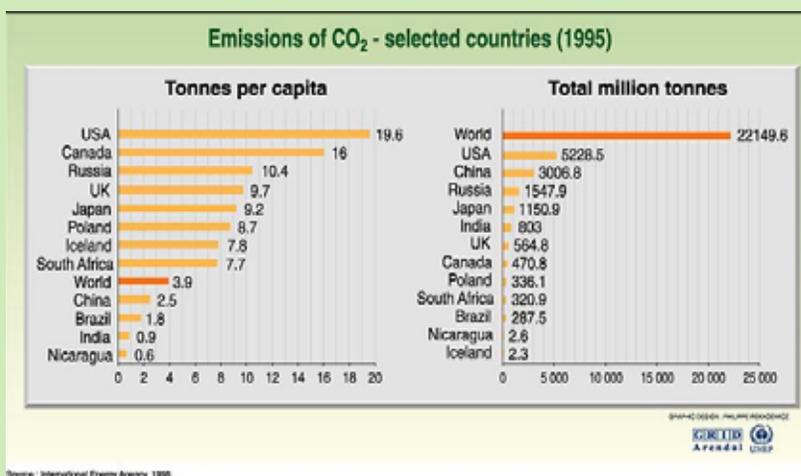


Poor countries face biggest impacts but rich countries produce most emissions!

The poorest countries in the world might also be the hardest hit. Poorer countries are located in parts of the world that can expect more droughts, diseases, insects and higher sea levels. Many of these poorer countries already have few resources and little money to feed their people or to develop their economies. It will be hard for these countries to respond to the changes that climate change will cause.

However, most of the greenhouse gas emissions that are causing climate change come from the richer countries in the world – the ones with lots of cars and industries. So these richer, industrialized countries are the cause of many of the climate change impacts in the poorer countries.

At the same time, poorer developing countries are trying to improve their standard of living so they are becoming more industrialized. They are starting to emit more and more greenhouse gas emissions. Developing countries are expected to be responsible for half of the world’s emissions by 2025. The challenge for developing countries is to improve their quality of life *and* control their greenhouse gas emissions. Do you think the richer, industrialized countries should chip in and help them do this?





Traditional Cultures

In the north, people who live off the land are already dealing with rapid changes in the climate. This is also happening in other countries. Indigenous people living in the Amazon forests in Brazil and nomadic cultures living in Africa are all being impacted by climate change. Indigenous people living near the ocean are losing parts of their traditional lands as sea levels rise.

The changing climate is affecting the weather, land and wildlife that many cultures have come to know over generations. This makes it harder to maintain a way of life that has depended upon detailed knowledge of the local environment.

So What Can We Do?

Almost everyone in the world – especially those in industrialized countries – contributes to greenhouse gas emissions every day. We do this when we travel, heat our homes, or buy new products. If you want to find out what you, your school, your governments and businesses can do to reduce greenhouse gas emissions, check out the Climate Change Solutions Backgrounders 13–17!



Key Points

- ★ Climate change will cause sea levels to rise. Some land will disappear and people will have to move. Flooding from salt water will affect farms and the environment.
- ★ Some parts of the world will get more rain and snow that will cause floods and landslides.
- ★ Other areas of the world will get less rain and snow. This will mean less drinking water for people. There will also be less water for farms crops and animals.
- ★ Insects, parasites and diseases will likely spread as climate change causes temperatures to warm up.
- ★ The coral reefs and phytoplankton in our oceans are dying partly because the ocean is warming up.
- ★ Traditional cultures around the world are being affected by the changing climate.



Want to Know More?

To learn more about the global impacts of climate change, go to these websites:

- **BBC Climate Change Site:**
http://news.bbc.co.uk/hi/english/static/in_depth/sci_tech/2000/climate_change/impact/default.stm – Click on different world areas to find out the impacts of climate change.
- **CKUA Radio:** <http://ckua.com/climatechange/singleshow15.html> – Listen online to an interview about how the South Pacific island of Tuvalu is being affected by rising sea levels.
- **Global Warming: Focus on the Future:**
http://globalwarming.enviroweb.org/ishappening/ishappening_frameset.html – Be sure to check out the backgrounders on issues such as rising waters, health, food and water.
- **Suzuki Foundation (Impacts):**
http://www.davidsuzuki.org/Climate_Change/Impacts/ – Click on the links for a good overview on different kinds of climate change impacts throughout the world.
- **Union of Concerned Scientists (Climate Impacts Map):**
<http://www.climatehotmap.org/> – Click on the map in any region, and you'll link into a description of climate change indicators in that area.