



## CLIMATE CHANGE 101

A FEW BASICS ON CLIMATE CHANGE AND CLIMATE JUSTICE.

### What is climate?

Weather refers to atmospheric conditions over a short period of time: minutes to weeks.  
Climate refers to atmospheric conditions over a long period of time: years to centuries.

### Is climate changing?

Yes. The IPCC reports that Earth's average surface temperature has increased by roughly **0.85°C** since the industrial revolution. This is concerning because although earth's climate has always fluctuated, the rate of climate change has increased dramatically due to human activity as societies have industrialized.

“**Climate change**” refers to this human-induced increase of atmospheric greenhouse gas concentrations beyond natural levels of variation.

The Intergovernmental Panel on Climate Change (IPCC) is the leading international source of scientifically informed knowledge on the state of climate change and its potential environmental and social impacts.

The IPCC was established by the UN and the World Meteorological Organization in 1988.

### Why is climate changing?

Greenhouse gases (GHGs) in the atmosphere absorb some of the solar energy entering and exiting Earth's atmosphere. These gases then transfer this energy to the other gases, effectively heating up the atmosphere.

GHGs are good, to an extent. They exist naturally to help keep the Earth warm enough to support life. Recently, however, concentrations of GHGs in the atmosphere have surpassed the levels of natural variability that can be assimilated by Earth systems. This higher quantity of atmospheric GHGs is a problem.

The IPCC reports that **78%** of the increase in greenhouse gas emissions observed between 1970 and 2010 can be attributed to increased combustion of fossil fuels and industrial processes driven by economic and population growth.



## Why is climate change a problem?

Climate change is already negatively impacting physical, biological, and human systems around the world. The two main consequences of climate change are ocean acidification and increased average global surface temperatures.

Ocean acidification, caused by the increased uptake of CO<sub>2</sub> by oceans, is negatively affecting marine ecosystems and fisheries. Increased temperatures are changing precipitation and snowmelt patterns, impacting the quantity and quality of water resources for human consumption and ecological life-support. Higher temperatures are also increasing the risk of both flooding and drought. Permafrost temperatures are increasing, glaciers and sea-ice sheets are shrinking, global sea levels are rising, and the frequency of heat waves is increasing.

With further warming, the IPCC projects increased risk to coastal systems and low-lying areas, marine systems, food security and production systems, urban and rural inhabitants (particularly the poor), economic sectors and services, and human security.

## Why is climate a justice issue?

Developed nations have contributed the majority of cumulative GHG emissions to date by using industrialization as a vehicle for national wealth. These emissions have placed pressure on insecure economies, largely nations in the Global South, as food and water security are increasingly threatened by rising temperatures.

The socially and economically marginalized are the most vulnerable to climate change.

## What is the solution?

According to the international scientific community, limiting an increase in average global surface temperature to less than 2°C since industrialization could maintain a window of “safe operating space” for humanity. Beyond this range we certainly risk triggering abrupt and irreversible changes in physical landscapes or ecosystems like strong sea level rise and the collapse of marine ecosystems.

Along with the reduction and prevention of GHG emissions, which is known as climate change “**mitigation**,” the fight against climate change must also include “**adaptation**” to the impacts of climate change that have already and will continue challenge life.



## How can we maintain 2°C?

The Deep Decarbonization Pathways Project (DDPP), an initiative of the UNSDSN, states that to maintain changes within 2°C, societies must almost entirely eliminate GHG emissions, and soon.

The DDPP calls for all nations to limit GHG emissions to **1.7 tonnes** per capita by 2050.

## What is the Canadian contribution?

Canadians emitted **20.7 tonnes** of GHGs per capita in 2013!

The DDPP has suggested that Canada needs to reduce its emissions by around 90% (to 73 Megatonnes by 2050) to help keep increases in global mean surface temperature below 2°C.

Although numerical estimations of Canadian responsibility vary, it is abundantly clear that Canada needs to take immediate and drastic action to reduce its contribution to the global climate change.

The United Nations Sustainable Development Solutions Network (UNSDSN) combines scientific and technical expertise from academia, civil society, and the private sector to support sustainable development problem solving.

The SDSN was initiated by UN Secretary-General Ban Ki-moon in 2012, and continues to promote integrated approaches to the current interconnected global challenges.

*For more information go to [cpj.ca/climate](http://cpj.ca/climate)*

