

Transition Buxton Economic Resilience Study 2014

Appendix 3: Why CO2 Matters

CO2 101: Why is carbon dioxide bad?

This greenhouse gas traps heat in the atmosphere, contributing to climate change.
By: [John Platt](#) Wed, Oct 09, 2013



Photo: [Curt Carnemark, World Bank/Flickr](#)

We hear a lot about carbon dioxide when we talk about [climate change](#), but sometimes it's important to go back and examine why too much CO2 in the atmosphere is a bad thing.

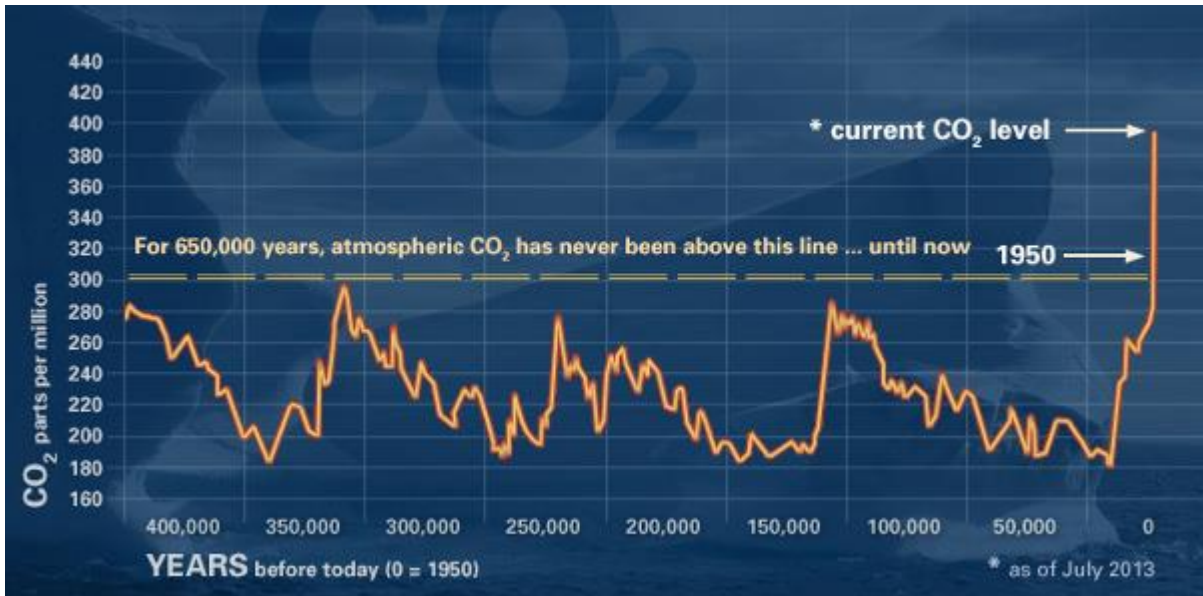
CO2 — a naturally occurring gas that is also emitted at great levels by human activity — is one of several [greenhouse gases](#) in our atmosphere. Other greenhouse gases include water vapor, methane, ozone, nitrous oxide and halocarbons. To understand the impact of these gases, we first start with the sun, which sends solar radiation in the form of light to Earth. The atmosphere deflects some of this radiation, while the rest hits the planetary surface and warms the land and oceans. The Earth then radiates its own heat back up in the form of infrared rays. Some of those rays escape the atmosphere, while others are absorbed and then re-emitted by the atmospheric gases. These gases — the greenhouse gases — then help to keep the planet at its normal temperature.

For millions of years, the production of greenhouse gases was regulated by the natural systems of the planet. Gases would be absorbed and emitted at a fairly steady rate. Temperatures, meanwhile, were maintained at a level that supported life around the world. The Environmental Protection Agency characterizes this as ["a balancing act."](#)

Humans changed the balancing act beginning in the second half of the 1700s, at the start of the Industrial Revolution. Since that time we have been adding greenhouse gases, primarily

CO₂, to the atmosphere at a steadily increasing rate, trapping that heat and warming the planet. Although there are several greenhouse gases — some are more potent than others — CO₂ currently represents about [84 percent of all greenhouse gases emitted by human activities](#), totaling about 30 billion tons a year. Most of this comes from burning fossil fuels for [electricity](#) and transportation, although industrial processes and forestry also contribute heavily.

Before the Industrial Revolution, CO₂ levels were about 270 parts per million (ppm). CO₂ levels were at about 313 ppm in 1960. They reached [400 ppm](#) earlier this year. Many climate scientists say levels need to be [reduced to 350 ppm](#) to avoid the effects of climate change.



Source: NOAA,

<http://climate.nasa.gov/evidence> Carbon dioxide isn't only affecting the atmosphere. It has also made the oceans about 30 percent more [acidic](#), affecting a wide variety of sea organisms. That percentage is also expected to rise in the coming years.

Obviously all of this carbon we have added to the atmosphere will not go away overnight. Its effects will be destructive and long-felt. But by understanding the impact of CO₂, hopefully we can make steps toward reducing our emissions and, if we're really lucky, avoid the worse effects of climate change yet to come.

Read more: <http://www.mnn.com/earth-matters/climate-weather/stories/co2-101-why-is-carbon-dioxide-bad#ixzz3IZj6PeLG>