

MECHANICS OF GLOBAL WARMING

1. THE KEELING CURVE * IS a measurement of atmospheric Co₂ for global climate data when some of the sun's radiation remains trapped by greenhouse gases in the earth's atmosphere.

Greenhouse gases are made up of 2/3 water vapour and 1/3 carbon dioxide and methane, and are emitted by human activity that upsets the delicate balance of the earth's carbon cycle.

The greenhouse effect causes global warming & climate change and is an observable fact. Greenhouse gases heat the atmosphere thanks to industrial action and the depletion of forests.

Both past & present emissions guarantee a warmer future.

* https://www.e-education.psu.edu/earth501/content/p5_p7.html Charles Keeling began measuring the atmospheric concentration of carbon dioxide at Mauna Loa in 1958.
https://en.wikipedia.org/wiki/Charles_David_Keeling

2. THE ALBEDO EFFECT When the Sun's rays hit the Earth a certain percentage of the energy is reflected back into space as light surfaces reflect heat and dark surfaces absorb heat and this is called the Albedo effect.

The proportion of the Earth's surface covered by snow and ice has a significant effect on how much of the incoming solar radiation is reflected.

Thick sea ice covered with snow in its natural condition reflects as much as 90% of the incoming solar radiation back BUT owing to heat trapped in the earth's atmosphere the Ice Cap is melting *

When snow melts it leaves a 'dark surface' which has a higher uptake of energy resulting in warming and further melting so that overall temperature in the area rises.

The main human activities that change the albedo effect are Fossil fuel combustion, industrial process and biomass burnt on a large scale, also aerosols and other pollutants in the atmosphere.

* <https://insideclimatenews.org/news/27122017/arctic-antarctic-sea-ice-sheets-2017-year-review-glaciers-disappearing-polar-records><https://www.youtube.com/watch?v=HR-UAA4Ucqs> Satellite maps show polar ice caps melting
<https://www.theguardian.com/environment/2014/sep/01/new-satellite-maps-show-polar-ice-caps-melting-at-unprecedented-rate>

3. THE CARBON BUDGET, defined as a tolerable quantity of greenhouse gas emissions emitted in total over a specified time. This budget needs to be in line with what is scientifically required to keep global warming and climate change “tolerable” to avoid disaster.

This is a global budget because we all share the same atmosphere.

The Carbon budget was **ALL SPENT IN 1987** and is now in deficit

Scientists have tracked numbers of emissions leading to specific rise in temperature and the impact higher temperatures have on the climate.

WWF's new report* [Mar 2018] *Wildlife in a Warming World*, reveals that if carbon emissions continue to rise **UN-CHECKED WE FACE MASS EXTINCTION OF SPECIES**

* <https://www.wwf.org.uk/wildlife-warming-world>

The average global temperature has already increased by 0.8 °C over the past century, most of that since the 1970

WE NEED A RAPID PHASE-OUT OF FOSSIL FUELS particularly coal, but also oil and gas.

4. FOSSIL FUELS AND CO₂ EMISSIONS:

Different fuels emit different amounts of carbon dioxide (CO₂) in relation to the energy they produce when burned and the energy produced is mainly determined by the carbon (C) and hydrogen (H) content of the fuel.

Under international agreement, CO₂ emissions from the combustion of biomass or biofuels are not included in national greenhouse gas emissions inventories . . .

5. CARBON FOOTPRINT, the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community.

CO₂, released by all fuel-burning vehicles can remain in the air for centuries causing a gentle warming effect, moreover different greenhouse gases play out in the atmosphere at different speeds.

So vapor trails and the tropospheric ozone produced by airplanes at altitude cause more potent but shorter-lived bursts of warming like flash-frying* in an extra-hot wok.

while generating global warming with CO₂ from motor vehicles is equivalent to slow-cooking the earth in a cast-iron skillet

* The surprisingly complex truth about planes and climate change

<https://www.theguardian.com/environment/blog/2010/sep/09/carbon-emissions-planes-shipping>

Flying Is Bad for the Planet. You Can Help Make It Better...

<https://www.nytimes.com/2017/07/27/climate/airplane-pollution-global-warming.html>

**WE NEED URGENT ACTION FROM GLOBAL LEADERS
TO CUT GREENHOUSE GAS EMISSIONS BEFORE IT'S
TOO LATE**

**THIS WILL BE VERY TOUGH TO ACHIEVE BUT IS
STILL POSSIBLE.**

10 tips for reducing your global warming emissions at home

<http://www.homeadviceguide.com/reducing-global-warming-emissions-home>

CARBON CAN BE ABSORBED BACK INTO THE EARTH THROUGH the natural action of TREES and SEAWEED

[see DrawDown in next section]

CHANGE REQUIRED: Climate giant, Greta Thunberg and her father Svante to talk about her path as an unknown Swedish school girl to an internationally recognized climate leader. Greta's passion for the truth about climate has changed the family's lives [*Dec 2018*] Watch this space <https://www.youtube.com/watch?v=GiD04TRwebQ>

17thApril 2019 ~ Greta Thunberg speaks at EU
<https://www.youtube.com/watch?v=dKd1V2NgAi4>

18thApril 2019 -BBC 1 CLIMATE CHANGE ~ the facts
<https://www.bbc.co.uk/programmes/m00049b>

LIVE LOCALLY, THINK GLOBALLY

NOTE: air conditioning equipment exacerbates climate change as it not only runs on electricity that relies primarily on fossil fuels to generate power but also uses the organic compound Hydrofluorocarbon (HFC) as the primary refrigerant.

HFCs * are a more potent greenhouse gas than carbon dioxide and leaks anywhere from the manufacturing of equipment to its installation and disposal.

In pre-Industrial days, we used air circulation and a variety of shade

* <https://www.google.com/search?client=firefox-b-1-d&q=airconditioning+and+global+warming>