

Background Resources on Climate Threats and Responses

Reaching 1.5C

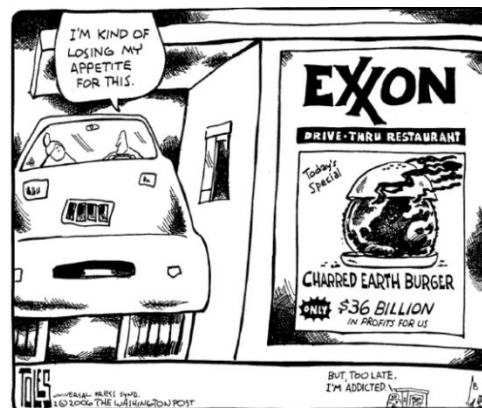
NASA: Earth is warming at a pace 'unprecedented in 1,000 years' “In the last 30 years we’ve really moved into exceptional territory,” Gavin Schmidt, director of NASA’s [Goddard Institute for Space Studies](#), said. “It’s unprecedented in 1,000 years. There’s no period that has the trend seen in the 20th century in terms of the inclination (of temperatures).”.....Schmidt is the highest-profile scientist [to effectively write-off the 1.5C target](#), which was adopted at December’s UN summit after heavy lobbying from island nations that risk being inundated by rising seas if temperatures exceed this level. **(Hansen famously called the Paris agreement (even the 1.5 target) a bunch of crap or something similarly pungent.)** Recent [research found](#) that just five more years of carbon dioxide emissions at current levels will virtually wipe out any chance of restraining temperatures to a 1.5C increase and avoid runaway climate change.



Forecast 11/3/16 ...That's according to the latest annual "[Emissions Gap Report](#)" (pdf) from the United Nations Environment Program (UNEP), which concluded that pledges to cut emissions will result in a global temperature rise of 3.4°C above pre-industrial levels, far above the 2° limit and 1.5° goal agreed to under last year's [Paris climate accord](#). <http://www.commondreams.org/news/2016/11/03/despite-paris-climate-pledge-planet-track-surpass-3degc-temperature-rise>

Earth Flirts with 1.5 C Threshold A Climate Central [analysis](#) shows that the world will have to dramatically accelerate emissions reductions if it wants to meet that goal. The average global temperature change for the first three months of 2016 was 1.48°C, essentially equaling the 1.5°C warming threshold agreed to by COP 21 negotiators in Paris last December.

February exceeded the 1.5°C target at 1.55°C, marking the first time the global average temperature has surpassed the sobering milestone in any month, **put the global average temperature change from early industrial levels for the first three months of 2016 at 1.48°C**. <https://www.scientificamerican.com/article/earth-flirts-with-a-1-5-degree-celsius-global-warming-threshold/>



12 Oct 2015 Catalogue of abrupt shifts - in IPCC AR5 **Eighteen out of 37 events occur for global warming levels of less than 2°C** We assess all Earth System Models underpinning the recent 5th Intergovernmental Panel on Climate Change report and systematically search for evidence of abrupt changes. We do find abrupt changes in sea ice, oceanic flows, land ice, and terrestrial ecosystem response, although with little consistency among the models. A particularly large number is projected for warming levels below 2°C. We discuss mechanisms and include methods to objectively classify abrupt climate change.

Methane Emissions Riddle/Tipping Points In any case, whether the source is the Arctic or the tropics, Nisbet [warns](#) that there is a real danger that climate change is starting to accelerate the processes that release methane (a much more potent GHG than CO2 in the short term) into the atmosphere, potentially triggering a troubling positive feedback in which further warming could produce more methane and still more warming. He calls the warmer and wetter conditions of the past decade, and their apparent impact on methane production across the tropics, “a troubling harbinger of more severe climate change.” http://e360.yale.edu/feature/methane_riddle_what_is_causing_the_rise_in_emissions/3047/

World Bank 2014 A [new report](#) explores the impact of climate change in Latin America and the Caribbean, the Middle East and North Africa, and Eastern Europe and Central Asia and finds that warming of close to 1.5°C above pre-industrial times is already locked into Earth’s atmospheric system by past and predicted greenhouse gas emissions.

Two-degree target Unrealistic: Oliver Geden, a researcher with the German Institute for International and Security Affairs, leveled similar charges earlier this year and has called for modifying the two-degree target, labeling it “patently unrealistic” and “obviously unattainable.” On the scientific front, meanwhile, a recent analysis by Stanford University earth scientist Rob Jackson and three colleagues found “without immediate and substantial mitigation . . . time has nearly run out for 2°C.” <http://www.washingtonpost.com/sf/national/2015/11/29/carbon/>

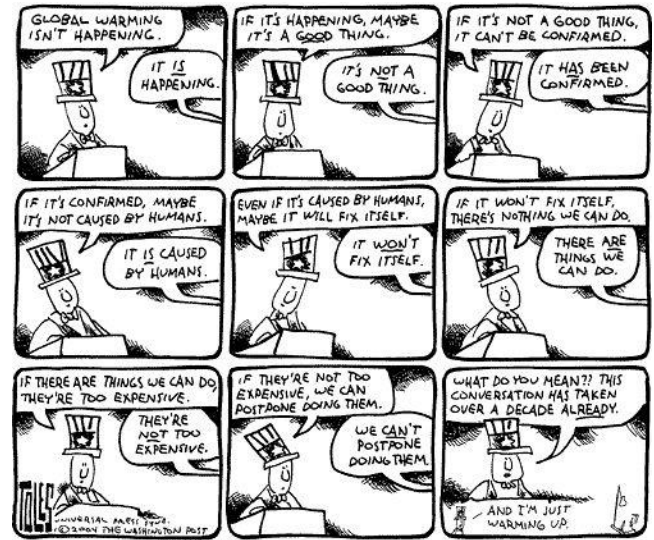
How the Earth will pay us back for our carbon emissions with ... more carbon emissions The really scary thing about climate change is not that humans will fail to get their emissions under control. The really scary thing is that at some point, the Earth will take over and start adding even more emissions on its **own due to feedback loops**. https://www.washingtonpost.com/news/energy-environment/wp/2016/10/03/there-are-our-carbon-emissions-and-then-there-are-the-ones-the-earth-will-punish-us-with/?utm_term=.b7fde7b2083c

Existing Impacts

Public Health Impacts: Lancet Health Commission

- 1) The effects of climate change threaten to undermine the last half-century of gains in development and global health. The impacts are being felt today, and future projections represent an unacceptably high and potentially catastrophic risk to human health.
- 2) Tackling climate change could be the greatest global health opportunity of the 21st century.
- 3) Achieving a decarbonized global economy and securing the public health benefits it offers is no longer primarily a technological or economic question – it is now a political one. <https://climatehealthcommission.org/>

Health: The 332-page report issued Monday by the Obama administration said global warming will make the air dirtier, water more contaminated and food more tainted. It warned of diseases, such as those spread by ticks and mosquitoes, longer allergy seasons, and thousands of heat wave deaths. <http://bigstory.ap.org/article/50671f110bfd4250bd8f859b17b15b24/fever-federal-report-says-global-warming-making-us-sick>



Noam Chomsky: Race to Disaster: Effects may soon become even more vividly apparent than they already are. In Bangladesh alone, tens of millions are expected to have to flee from low-lying plains in coming years because of sea level rise and more severe weather, creating a migrant crisis that will make today's pale in significance. With considerable justice, Bangladesh's leading climate scientist says that, "These migrants should have the right to move to the countries from which all these greenhouse gases are coming. Millions should be able to go to the United States." And to the other rich countries that have grown wealthy while bringing about a new geological era, the Anthropocene, marked by radical human transformation of the environment. These catastrophic consequences can only increase, not just in Bangladesh, but in all of South Asia as temperatures, already intolerable for the poor, inexorably rise and the Himalayan glaciers melt, threatening the entire water supply. Already in India, some 300 million people are reported to lack adequate drinking water. And the effects will reach far beyond.

It is hard to find words to capture the fact that humans are facing the most important question in their history -- whether organized human life will survive in anything like the form we know -- and are answering it by accelerating the race to disaster. <http://www.truth-out.org/opinion/item/38360-trump-in-the-white-house-an-interview-with-noam-chomsky>

Extinction: Just to illustrate the degree of biodiversity loss we're facing, let's take you through one scientific analysis...

- The rapid loss of species we are seeing today is estimated by experts to be between 1,000 and 10,000 times higher than the *natural extinction rate*.*
- ... if the upper estimate of species numbers is true – that there are 100 million different species co-existing with us on our planet – then between 10,000 and 100,000 species are becoming extinct each year.

*Experts actually call this *natural extinction rate* the background extinction rate. This simply means the rate of species extinctions that would occur if we humans were not around.** Between 1.4 and 1.8 million species have already been scientifically identified.

Unlike the mass extinction events of geological history, the current extinction challenge is one for which a single species – ours – appears to be almost wholly responsible. http://wwf.panda.org/about_our_earth/biodiversity/biodiversity/

An 'Unprecedented' 102 Million Trees Have Died In California's Drought-Stricken Forests

http://www.huffingtonpost.com/entry/million-tree-deaths-california-drought_us_58412918e4b0c68e0480331d
http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd525364.pdf

Forests: A [new study](#) has found that climate change from human activity nearly doubled the area burned by forest fires over the past three decades in the Western United States.

"We estimate that human-caused climate change contributed to an additional 4.2 million hectares of forest fire area during 1984–2015," the authors wrote in the journal *Proceedings of the National Academy of Sciences*. That's 16,200 square miles, roughly the size of Massachusetts and Connecticut combined.

<http://www.takepart.com/article/2016/10/12/climate-change-linked-huge-increase-forest-fires?cmpid=tp-ptnr-huffpost>

A New Global Tinderbox: The World's Northern Forests by Ed Struzik: Yale Environment 360

http://e360.yale.edu/feature/a_new_global_tinderbox_the_worlds_boreal_forests/2916/

Oceans: Acidification: oceans already 30% more acidic (pH 8.3 to 8.1)...150% more by 2100 (to 7.9pH). 93.4 % of total global warming gone into ocean so far.Ocean conveyor belt...50% chance will be interrupted if reach 3 degree C increase.

Sea Level: Without a sharp reduction in greenhouse gas emissions, the global sea level is likely to increase "several meters over a timescale of 50 to 150 years," the paper states, warning that the Earth's oceans were six to nine meters higher during the [Eemian period](#) – an interglacial phase about 120,000 years ago that was less than 1C warmer than it is today.Nevertheless, humanity is still pumping out CO₂ into the atmosphere at a rate 10 times faster than at any point [in the past 66m years](#), with the resulting sea level rises, [extreme weather events](#), [coral bleaching](#) and [drought](#) already evidenced around the globe. <https://www.theguardian.com/science/2016/mar/22/sea-level-rise-james-hansen-climate-change-scientist>

Ice Sheet Collapse: "The ice sheets are contributing to sea level rise sooner and greater than anticipated," Rignon said during a NASA press conference Wednesday. "Right now, the contribution is about one third. We know that in future warming (melting ice sheets) will dominate sea level rise. With future warming we may have multiples of 6 meters, or 18 feet, and higher. It may be a half meter per century or several meters per century, we don't know. We've never seen an ice sheet collapse before." The Greenland ice sheet, covering 660,000 square miles -- nearly the area of Alaska -- shed an average of 303 gigatons (one gigaton is a billion tons) of ice a year over the past decade, according to satellite measurements. The Antarctic ice sheet, covering 5.4 million square miles – larger than the United States and India combined – has lost an average of 118 gigatons a year. In late July, NASA satellites captured the "calving" or breakup of a 12-square-kilometer hunk of ice on Greenland's Jakobshavn Glacier, the biggest loss recorded. <http://news.discovery.com/earth/global-warm>

Effective Response

"We will not, *we cannot*, wreck this planet. There is no planet B. Earth is a rarity of literally cosmic proportions. It is an overflowing treasure chest of life-forms of unimaginable variety and beauty. It is perfectly fitted to us humans as we evolved to fit it. It would amount to the gravest criminal act of irresponsibility in human history were we to throw it into fatal imbalance because of a wanton addiction to carbon.

So we have our work before us. We have our task. We have the oceans to preserve. We have the rain forests to protect. We have farmlands and coasts to defend. We have the panoply of spectacular species which we evolved to shepherd. *This is our home. It's time to start acting like it.*"

Excerpted from [Madhouse Effect](#) by Michael Mann and Tim Toles.



Benefits: For example, [Climate Change in the United States: Benefits of Global Action](#) finds that lowering greenhouse gas emissions would have "a substantial effect on reducing the incidence of extreme temperature and precipitation events by the end of the century, as well as the impacts to humans and the environment associated with these extreme events." In fact, by 2100 such mitigation would help avoid 12,000 deaths annually associated with extreme temperatures in 49 U.S. cities, according to the EPA. <http://www.commondreams.org/news/2015/06/23/epa-report-reinforces-urgency-global-climate-crisis>

Here's what it would take for the US to run on 100% renewable energy It is technically and economically feasible to run the US economy entirely on renewable energy, and to do so by 2050. That is the conclusion of a [study last year](#) in the journal *Energy & Environmental Science*, authored by Stanford scholar Mark Z. Jacobson and nine colleagues.... Switching from liquid fuels to renewable electricity would also virtually eliminate air pollution, thus

avoiding health costs to the tune of \$600 billion a year by 2050. Meanwhile, moving everything to carbon-free electricity would avoid about \$3.3 trillion a year in global climate change costs of US emissions by 2050.

<http://www.vox.com/2015/6/9/8748081/us-100-percent-renewable-energy>

100% Clean Energy: The Solutions Project accelerates the transition to 100% clean, renewable energy for all people and purposes. To achieve this mission, we engage the public, celebrate and convene leaders, and advance partnerships and policies that make strides on the road to 100%. We implement this integrated model at the state level. To maintain our national reach, we develop inspired content, amplify stories and media, and create opportunities to celebrate and activate leadership across the country. <http://thesolutionsproject.org/>

Race to renewable: five developing countries ditching fossil fuels. China has emerged as the world's renewables superpower in less than a decade of highly focused development – the country is the world's largest producer and user of renewable energy technologies. The official target of the Chinese government is for non-fossil fuels [to grow to 20% of total energy consumption by 2030](#), rising from the current level of 11%. Meanwhile coal consumption is to be [capped at 4.2bn tons by 2020](#). China is also committed to a significant increase of the electricity generating capacity based on renewable sources, doubling wind and quadrupling solar by 2020. <https://www.theguardian.com/global-development-professionals-network/2015/sep/15/five-developing-countries-ditching-fossil-fuels-china-india-costa-rica-afghanistan-albania>

TCM Zero Emissions: The Climate Mobilization's "[Victory Plan](#)" aims to detail how a fully mobilized United States government could drive our economy to net zero greenhouse gas emissions by 2025, restore a safe climate, end the sixth mass extinction, reverse ecological overshoot — and revitalize America. This is far beyond anything proposed in today's polite political debates about climate action. We believe that unless policymakers, advocates, and citizens envision what "victory" might actually look like when facing the complexity of our looming emergency, it's impossible to determine a horizon for our ambitions that is in line with the increasingly stark realities of climate science.



Leading the Public Into Emergency Mode: A New Strategy For the Climate Movement. How we react to the climate crisis will shape centuries and millennia to come. Given the stakes, and the extremely short timetable, it is imperative that we strive to maximize the efficacy of our actions — from ourselves as individuals, from our nation, from the global community of nations, and from the organizations that are trying to avert this catastrophe. http://www.theclimatemobilization.org/em_text_only

The New Haven Climate Movement joins other organizations in concluding that the present impacts and scientific analysis of future impacts show an unacceptable level of damage to our home. We are very concerned that the most vulnerable and least responsible – the young, marginalized in the US, Two Thirds World communities – will be most affected. We therefore will be working to discuss this emergency with others, invite them to join this movement, and create local, state and national mobilizations necessary to stop runaway climate change.

Actions:

- *Get involved with NHCM's outreach campaign.*
- *Learn more about climate emergency and mobilization. (TCM has good [resources](#))*
- *Recruit others to join effort to mobilize.*
- *Work to get elected leaders to support mobilizations at the state and federal level.*

www.newhavenclimatemovement.org