



# the weekly anthropocene

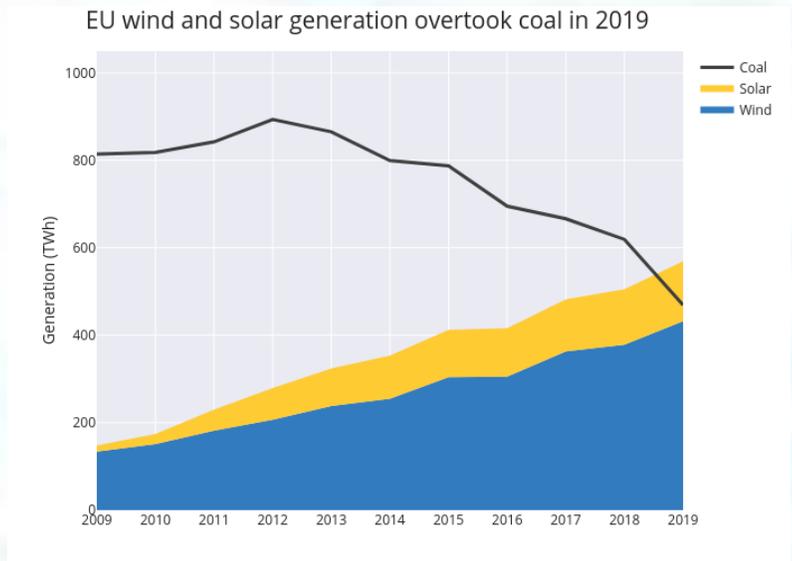
dispatches from the wild, weird world of humanity and its biosphere



By Sam Matey, July 29, 2020

## Renewables v. Fossil Fuels. Two new reports

confirm again that 2020 is the year in which the renewables revolution goes into high gear. First, the European Union's Great Energy Transition is zooming ahead. A report from energy think-tank Ember found that during the first half of 2020, for the first time ever, renewables generated more electricity than fossil fuels across the 27 member states of the European Union. In the EU from January through June 2020, wind, solar, hydro, and bioenergy generated 40% of all electricity, while



coal, oil, and gas generated just 34%. (Nuclear power, which France has invested heavily in, accounted for much of the remaining 26%). As reported in *The Weekly Anthropocene*, Spain, Portugal, Austria, and Sweden all closed some or all of their coal plants. The rates of change are also impressive-renewables rose by 11% from mid-2019, fossil fuels overall declined by 32% coal declined by 32%, and EU power sector carbon emissions declined by 23%. Every EU country that still uses coal saw a fall in coal generation. Even natural gas generation, often hyped by the fossil fuel industry as a last-ditch attempt to compete with renewables, fell by 6% across the EU. Also notable are the outliers, for good and ill: Denmark gained 64% of its electricity in the first half of 2020 from wind and solar power alone, while Poland produced more coal-generated electricity than 25 other EU nations combined (and slightly more than Germany, the 26<sup>th</sup> other EU nation). Overall, this is great news! For more on this amazing story, check out [ember-climate.org/project/power-2019/](https://ember-climate.org/project/power-2019/).

The United States isn't quite in Europe's league yet (though that could change if Biden wins and his Clean Energy Plan passes!) but renewables are still having a record-breaking year. New data from the Energy Information Administration (EIA) revealed that in May 2020, renewable energy (solar, wind, geothermal, hydro, and biomass) produced 25.3% of the nation's electricity, an all-time high. For the January-May 2020 period, renewables generated 22.3% of America's power, up from 20.2% a year earlier and substantially outperforming coal, which generated just 16.6% of total electrical output. For the January-May 2020 period compared to January-May 2019, solar-generated electricity grew by 23.1%, and wind electricity grew by 11.6%. We are in the early days of a clean energy revolution! For more, see [tinyurl.com/USACleanPower2020](https://tinyurl.com/USACleanPower2020).



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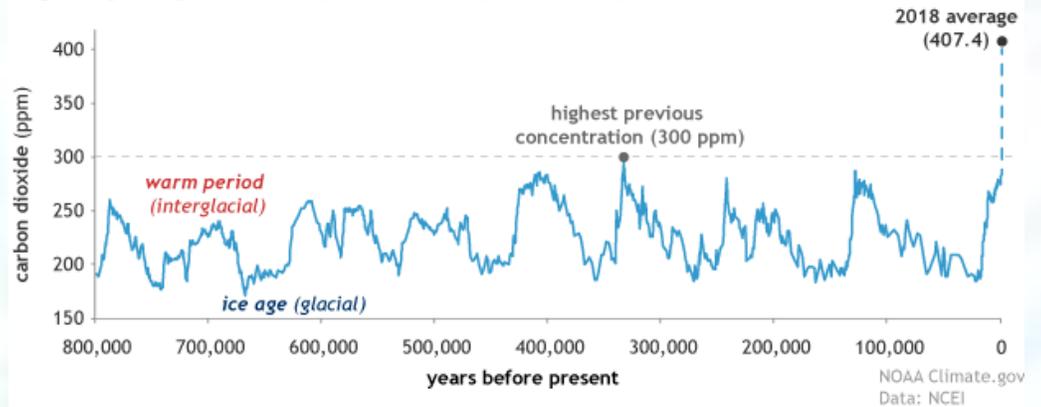
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## Climate Model. A new

climate modelling study gave us the clearest look yet at the Earth system's likely future warming response to carbon emissions, building upon 40 years of research. Their work focused on "equilibrium climate sensitivity"

CO<sub>2</sub> during ice ages and warm periods for the past 800,000 years



(ECS) the best estimate for how much the world will warm if CO<sub>2</sub> concentration doubles from preindustrial levels.

Preindustrial levels were 280 parts per million (ppm), we're at over 410 ppm in 2020 (far higher than at any point in the previous 800,000 years, see 2018 in the chart above) and a doubling would be 560 ppm, likely occurring around 2060 if humanity doesn't get its collective act together. The best analyses for decades haven't been able to get to a range more specific than a temperature rise of between 1.5 degrees Celsius (1.5 C) and 4.5 C, ranging from damaging but relatively manageable to absolutely catastrophic. Now, the new comprehensive modeling study, incorporating data from climate science since the 1800s, paleoclimate data from the last 25 million years, global climate models, and models focused on the details of cloud behavior (clouds are a knotty confounding variable in climate science), has calculated a new ECS: likely between 2.6 C and 4.1 C. That's a good news/bad news situation, as both the high-end and low-end probabilities now appear unlikely. (Note: in IPCC standard terminology, or "climate science-ese", "likely" has a specific meaning of greater than 66% probability) This may be as clear a picture of future warming as we'll ever need: we know enough to know it's going to be very bad unless we decarbonize our civilization in the early to mid 21<sup>st</sup> century. And even if we do that, some degree of serious warming is essentially "baked in" at this point, and we'll have to deal with it while trying to not make it worse. As Dr. Kate Marvel said of the new study "We can be very confident in ruling out sensitivities on the low end. So basically what we're saying here is that there is really no evidence for any sort of natural response, any sort of big, stabilizing feedback, that in the absence of human actions, is going to save us from climate change." And as climate scientist Dr. Andrew Dessler (not involved with this study) told Scientific American, "It's not clear to me how much we would gain from further decreases in the uncertainty...What this has done, in my opinion, is it's really moved the game away from these questions about the physics of the climate system into questions about how are humans going to react to climate change." For more, see [tinyurl.com/NewClimateStudy](https://tinyurl.com/NewClimateStudy) and [tinyurl.com/NewWarmingStudy](https://tinyurl.com/NewWarmingStudy). For more on climate change and CO<sub>2</sub> concentration, see [esrl.noaa.gov/gmd/ccgg/trends/](https://esrl.noaa.gov/gmd/ccgg/trends/) and [climate.gov/](https://climate.gov/).



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**Great American Outdoors Act.** In a rare bipartisan conservation victory, the potentially groundbreaking Great American Outdoors Act has passed both the Senate and the House, with all but two Democrats present in support and a surprisingly large minority of Republicans joining them. Notably, the Act was introduced into the House by the late, great Representative John Lewis. The Act, if signed into law, would be a massive victory for America's wild lands, channeling vast sums to national parks and conservation projects across the country, finally addressing the decades-long backlog of federal conservation funding. While Republicans have held up parks funding for years, it's well-known that they're only supporting it now because Senators Cory Gardner and Steve Daines are up for reelection, they represent wilderness-rich western states, and they're desperately trying to curry favor with their constituents as an attempt to distract from their enabling of a wannabe autocrat. Republicans are only supporting this as a political gambit, and it doesn't absolve them one whit from their abysmal record-but it's still a really big deal that we could finally be getting decent funding for our national parks. We'll dig more into the details of this awesome Act if and when it becomes law!

**Ohio.** The Republican-controlled Ohio state legislature has for years been enacting truly terrible laws bailing out fossil fuels and attempting to slow down the growth of renewable energy. Now, we know why. On July 21, the FBI arrested Ohio House Speaker Larry Householder and four of his associates for racketeering, after unearthing an unbelievable \$61 million worth of payments from energy company FirstEnergy, among others, in exchange for pushing through HB6, a bill that bailed out four coal and nuclear power plants while rolling back renewable energy targets. The old energy companies will do anything to fight the renewables revolution. For the full sordid story, see [tinyurl.com/OhioScandal](https://tinyurl.com/OhioScandal).

**Amazon.** As the Amazon is buffeted by COVID-19, deforestation, wildfires, the illegal wildlife trade, and the malice of President Jair Bolsonaro, scientists have come together to form a new UN-supported Science Panel for the Amazon (SPA), modeled on the IPCC, to work to find long-lasting solutions. Good news! For more, see [tinyurl.com/AmazonSPA](https://tinyurl.com/AmazonSPA).

**Siberia.** As an unprecedented heatwave rages on, Siberia's "Gateway to the Underworld" Batagay megaslump, a massive sinkhole forged by melting permafrost, is growing. See [tinyurl.com/Batagay-megaslump](https://tinyurl.com/Batagay-megaslump) for more.