



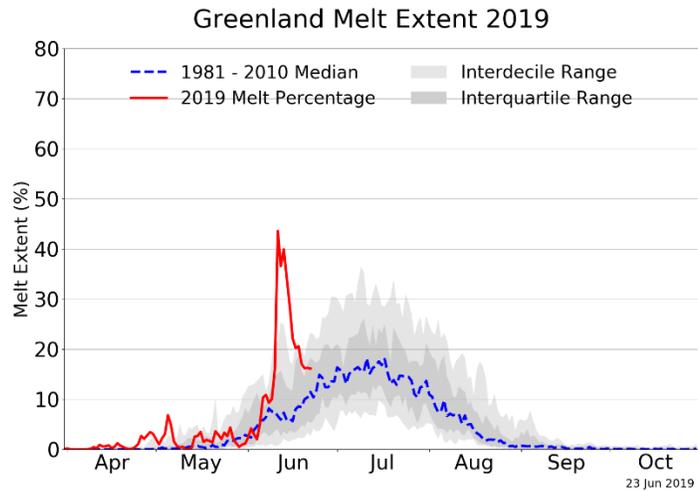
the weekly anthropocene

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



By Sam Matey, June 5 2019

Melting Ice: Greenland. Greenland, the largest island in the world, is mostly covered by a massive ice sheet that holds 8% of Earth's fresh water. Three recent news items have further demonstrated that Greenland is undergoing a rapid, profound metamorphosis due to climate change. First, Greenland has seen a very wacky June 2019, with off-the-scale ice loss across much of the island. It is estimated that on June 13th alone, 40% of Greenland experienced melting,



NSIDC / Thomas Mote, University of Georgia

with 2 billion tons lost on that day alone. (See the graph above from the National Snow and Ice Data Center for an illustration of just how unusual this is). Second, a research team from the University of Alaska Fairbanks (UAF) used data from NASA's Operation IceBridge (aerial mapping of polar ice) to build a comprehensive model of potential changes in Greenland's ice sheet under different potential greenhouse gas emissions scenarios (and thus, climate change intensities). They found that if greenhouse gas emissions remain on their current path (a scenario widely known as RCP 8.5), almost all of Greenland's ice sheet could melt by the year 3000, adding 24 feet to world sea level. This alone (disregarding ongoing melting from Antarctica and other sources) would be enough to flood vast areas of coastline around the globe. However, if greenhouse gas emissions are aggressively reduced, keeping warming below 2 degrees Celsius (a scenario known as RCP 2.6), only 8% to 25% of the ice sheet would melt by 3000, leading to only about 6.5 feet of sea level rise. Third, a recent study led by the University of Maine's Climate Change Institute found that Greenland's ecosystems and environment are shifting extraordinarily quickly in response to the warming, melting ice sheet. The researchers analyzed 40 years of weather data for the Kangerlussuaq area of West Greenland and found that climate change-induced warming had led to an array of synchronous environmental responses, including increased diversity in lake ecosystems (due to more time ice-free and exposed to light), a longer growing season and earlier emergence for an array of plant species, and an increase in dust storms due to exposed ground left by retreating glaciers.

Taken together, the new information from Greenland underscores a fundamental reality of living in the Anthropocene. It really is up to us what we want our future planet to look like. For regular updates on Greenland, see nsidc.org/greenland-today/. For more on the June warming event, see tinyurl.com/yf2nrt8. For more on the UAF study, see tinyurl.com/y48kgf9h. For more on the UMaine study, see tinyurl.com/yxp7luzk



the weekly anthropocene



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

By Sam Matey, June 5 2019

Melting Ice: The Himalayas.

Researchers from the Earth Institute at Columbia University have analyzed 40 years' worth of satellite imagery of India, China, Nepal, and Bhutan's Himalaya Mountains (including, interestingly, declassified Cold War-era US military satellite photos) to analyze the effect climate change has had on these mountains' venerable glaciers. (Pictured above:



an image of a part of the Himalayas on the Nepal-India border, captured on December 20, 1975 by a US HEXAGON recon satellite). Their study, recently published in *Science Advances*, confirmed an array of smaller-scale reports that the Himalaya's glaciers have been shrinking due to climate change. The researchers found that temperatures in the Himalayas had been an average of 1.8 degrees Fahrenheit (1 degree Celsius) higher in the period from 2000 to 2016 than in the period from 1975 to 2000. As a result, ice loss has accelerated, from an average of 0.25 meters (10 inches) of ice per year between 1975 and 2000 to an average of 0.5 meters (20 inches) per year after 2000. The loss is not uniform: at warmer lower elevations, some ice surfaces are losing up to 5 meters (16 feet) per year. In recent years, the Himalayas' glaciers collectively have lost an average of 8 billion tons of water, or 3.2 million Olympic swimming pools' worth, annually. The researchers estimate that only 72% percent of the ice mass present in 1975 remained as of 2016. The researchers did not analyze data on the nearby Pamir, Hindu Kush, or Tian Shan mountain ranges, but other studies have suggested that their glaciers are melting as well. The research team is also extremely confident that climate change-induced global warming is behind the melting of the Himalayas, as a calculated of the level of melting that would be expected under rising temperatures matches exactly with the level of melting observed. Over 800 million people depend on Himalayan glacial runoff, which feeds such mighty rivers as the Indus, Ganges, and Brahmaputra, for irrigation, drinking water, and hydropower. Although the current melting has increased runoff in the short term (which has caused its own problems, including increased flooding), their critical watershed position in one of the most densely population regions of the world indicates that the melting of the Himalayas' glaciers could have profoundly damaging long-term consequences. This is extremely sobering news, and another reminder of the consequences of climate change. For more, see tinyurl.com/y3c87zgp, tinyurl.com/y5baubac, and tinyurl.com/y2ep3256.



the weekly anthropocene

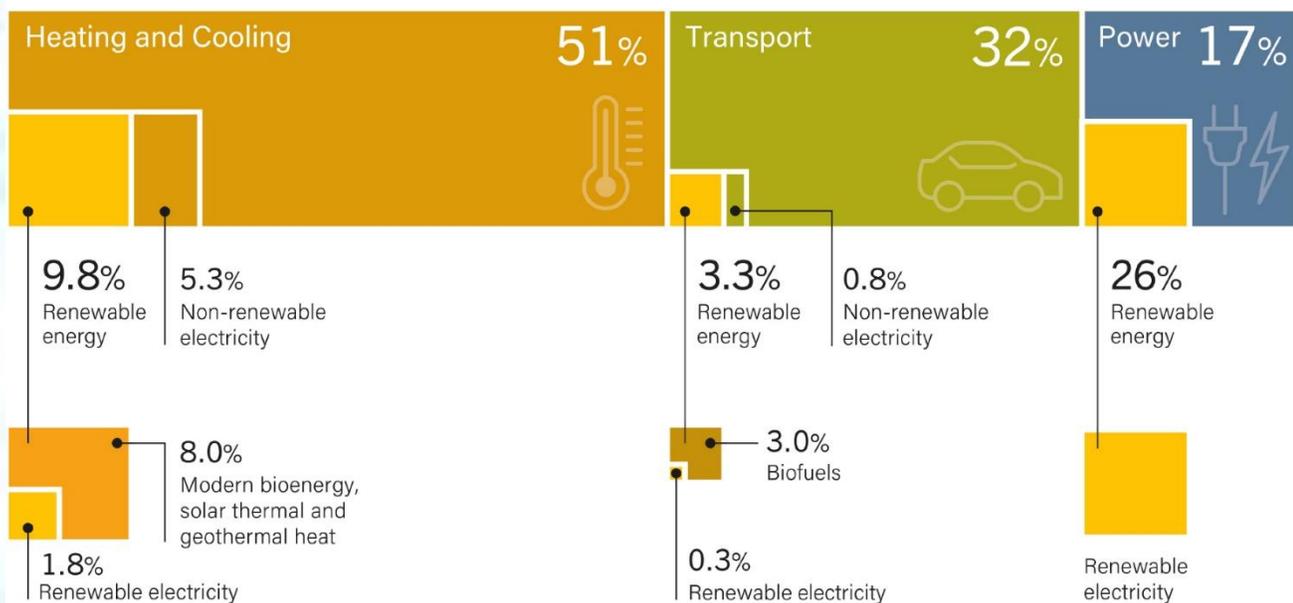


dispatches from the wild, weird world of humanity and its biosphere

By Sam Matey, June 5 2019

Renewable Energy: The EIA and REN21 Reports. In the last week, two major reports have set forth a comprehensive picture of the progress renewable energy has made in supplanting climate change-causing fossil fuels, as well as how far we still have to go. First, on June 11th, the US Energy Information Administration released its Short-Term Energy Outlook report. Key takeaways include that renewable fuels (wind, solar, hydropower, etc.) are set to produce 18% of US electricity in 2019 and nearly 20% in 2020, while nuclear will regrettably fall from 20% to 19%. Natural gas (a climate change-causing fossil fuel, but not as dirty or carbon-intensive as coal) looks set to continue its rise, from 35% in 2018 to a projected 37% in 2019 and 38% in 2020. Finally, coal, the most carbon-intensive and pollutant-heavy fuel, looks set to continue its fall, from producing 27% of US electricity in 2018 to 24% in 2019 and 23% in 2020. Finally, after American energy-related carbon emissions rose by 2.7% in 2018, the EIA forecasts that they will decline by 2% in 2019 and 0.9% in 2020. This is broadly the right direction, with renewables rising and coal and CO2 emissions declining, but it's still far, far too slow. For more, see www.eia.gov/outlooks/steo/.

Renewable Energy in Total Final Energy Consumption, by Sector, 2016



Second, on June 17th, the think-tank Renewable Energy Policy Network for the 21st Century (REN21) released its annual Renewables Global Status Report. (Pictured above: a schematic from the report). One key point is that renewables are growing rapidly, especially in the electricity sector, where renewables account for more than half of all new electricity generating capacity being built in the world today. Transportation and heating/cooling have been slower to decarbonize, but that could change quickly, as electric cars are booming worldwide. However, the report also highlights two particularly disturbing points: world carbon emissions rose by 1.7% in 2018, and subsidies for the fossil fuel industry are still greater than those for renewable energy. There's a lot of work left to do. For more, see tinyurl.com/y4xfj97j.



the weekly anthropocene



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

By Sam Matey, June 5 2019

Renewable Energy: New York State. In a great step forward for renewable energy and emissions reduction in America and the world, the New York state legislature has passed the Climate Leadership and Communities Protection Act, legally requiring the Empire State to get 70% of its electricity from renewables by 2030, all of its electricity from carbon-free clean energy by 2040 and to reach net-zero carbon emissions by 2050.



(Pictured: the Long Island Solar Farm). Governor Cuomo has pledged to sign the bill soon. This is incredibly impressive, and not just because of the size and economic heft of New York. Many other states have committed to 100% clean energy for electricity (see article below) but very few have committed to net-zero emissions, as that requires reforming not just the electricity sector, but the transportation, heating/cooling, and industry sectors. To accomplish this, the Act creates a 22-member Climate Action Council (similar to Maine's!) that will develop sector-specific emissions reduction plans. The Act also creates a climate justice working group to protect that impoverished communities and at-risk industries, mandates a 23% increase in energy efficiency, and sets a target for a huge boom in offshore wind power development. This is a great day for action on climate change-the United States' third-biggest economy has just set its toughest emissions reduction targets, setting a new standard for decarbonization that will resonate worldwide. Spectacular news! For more, see tinyurl.com/y4gcmjlb and tinyurl.com/y5knu47x.

Renewable Energy: A Bunch of Other States. New York's bold action, though notably far-reaching, is far from an outlier. Over the last few years, states across the nation have taken action to become leaders in the renewable energy economy and do their part to slow climate change. **Hawaii, Washington DC, and Puerto Rico** (and, as soon as Governor Mills signs the bill, **Maine!**) have all enacted legislation





the weekly anthropocene

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



By Sam Matey, June 5 2019

committing them to move to 100% renewable energy for the electricity sector by 2050 (or, in some cases, sooner). Furthermore, **California, Nevada, New Mexico, and Washington State** have enacted legislation committing them to move to 100% “clean” or “carbon-free” energy (renewables plus nuclear, neither of which contribute to climate change) by 2050 or earlier. Finally, although similar bills failed to pass this year in Illinois, Minnesota, Massachusetts, and New Jersey, **New Jersey** Governor Phil Murphy has signed an executive order developing an Energy Master Plan for the Garden State to achieve 100% clean energy by 2050. Oregon...remains in a very strange situation (see article below), but could still potentially get a strong climate bill this year or the next. And hundreds of cities, towns, and counties throughout the nation, including Chicago, Los Angeles, St. Louis, Atlanta, San Francisco, and Salt Lake City, have also committed to 100% clean or renewable energy. (Pictured above is a map of states and cities committed to 100% renewable or clean energy as of a few weeks ago-and it doesn't even include New York, New Jersey or Maine!) While the federal government scoffs at the possibility of substantive action on climate change, America's laboratories of democracy are quietly showing that it can be done. For more, see www.sierraclub.org/ready-for-100/commitments.

Renewable Energy: An Insane Standoff in Oregon.

Meanwhile, in a truly unbelievable example of moronic intransigence, eleven Republican state senators in Oregon have *literally fled the state Capitol* to avoid voting on House Bill 2020, a far-reaching act that would use a cap-and-trade system Oregon to an 80% reduction in greenhouse gas emissions, across the electricity, transportation, and industry sectors, by 2050. The Oregon legislature has Democratic supermajorities in both chambers, so this bill would surely pass under normal conditions.

However, by fleeing the state, the Republican runaways have denied the legislature a quorum, so it cannot legally vote. Democratic Governor Kate Brown (pictured) has sent state police to retrieve them, and they are each being fined \$500 for each day they are absent from roll-call. In a further crazy (and deeply immoral and un-American) twist, it appears that at least some of the scofflaw legislators are willing to take up arms in defense of their stupidity: GOP State Senator Brian Boquist (whose whereabouts are currently unknown) said the state police should “send bachelors and come heavily armed,” and a fringe anti-government “militia” known as the 3-Percenter is pledging to “protect” the fugitive “lawmakers.” As of July 22nd, Saturday, the state Capitol had shut down for the day after state police warned that militia members had made threats of violence. As of July 24th, Monday, many of the Republican runaways were reportedly hiding out in Idaho, where local anti-government extremist groups had





the weekly anthropocene



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

By Sam Matey, June 5 2019

vowed online to protect them by force of arms. On July 25th, the Democratic Senate President announced that they no longer had the votes for the climate bill, which may be a cave-in or may be a gambit to get the Republicans to return.

This sounds like a parody article, but I assure you it is not. Republican legislators are literally running away from the duties they took an oath to fulfill, hiding from the law, and (for at least one of them) threatening violence against state police in an effort to prevent a widely supported bill to take action on climate change, the greatest threat of our time, from passing. To be fair, Democratic legislators in other states, such as Texas, have adopted similar walk-out tactics in the past to stop bills from passing, but what makes this Oregon situation absolutely unprecedented is the involvement of heavily armed fanatics and open threats of violence in a legislative dispute. This may be the single greatest example of the depths of cowardice, immorality, and sheer idiocy prevailing among right-wing opponents to climate action in modern America. As Governor Kate Brown (pictured) said, "The Senate Republicans have decided to abandon their duty to serve their constituents and walk out...It is absolutely unacceptable that the Senate Republicans would turn their backs on their constituents who they are honor-bound to represent here in this building. They need to return and do the jobs they were elected to do." Here's hoping the state police find them, fine them, and drag these scumbags back to do their jobs-and that long-term, the festering carbuncle of right-wing extremism is excised from American politics For more on this truly insane story, see tinyurl.com/y4l4x3wp, tinyurl.com/y2ptts9v, and tinyurl.com/yysypvx3.

Renewable Energy: The Federal Fiasco. While states

and cities strive to take action on climate change, the Trump Administration remains utterly beholden to the whims of the moribund and malevolent fossil fuel industry. On June 19,

2019, Trump's EPA issued the "Affordable Clean Energy" rule, quickly dubbed the "Dirty Power Plan" due to its transparent

pandering to the coal industry. (Pictured: the Monroe coal

plant in Michigan) This rule scraps the federally mandated

emissions reduction targets set by Obama's Clean Power Plan

regulations and allows states to set their own targets on a plant-by-plant basis, effectively opening the way for coal

plants in Republican-controlled states to face no pollution reduction targets at all. However, while an immensely

disappointing failure of leadership, this is unlikely to have any profound negative effect. As the EIA reported (see article

above) coal is declining anyway due to market forces. Furthermore, the Dirty Power Plan may be illegal under the Clean





the weekly anthropocene



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

By Sam Matey, June 5 2019

Air Act on at least three counts, and the Attorney Generals of California and New York are already planning to sue. For more on the Dirty Power Plan, see tinyurl.com/yxu9yopw.

While attempting to throw coal a lifeline, the Trump Administration is also attempting to raid a fund primarily used for renewable energy projects to build new natural gas and plastic manufacturing facilities in Ohio and West Virginia. The Democratic-controlled House has passed a bill to stop this, but the Republican Senate is likely to let it slide. For the climate, renewable energy, and good governance, 2020 can't come soon enough. For more, see tinyurl.com/yyxfnhu3.

Renewable Energy: Absolute Polarization. In the Trump Presidency, one undeniable fact has come to dominate the conversation on climate and environmental policy in the United States. From cities to states to the federal government, the Republican Party is acting to prop up fossil fuel companies and hold up action to confront climate change as much as possible, while the Democratic Party is doing everything they can to take action to boost renewable energy, reduce greenhouse gas emissions, and secure America's future. Every state currently committed to 100% renewable or clean energy is controlled by the Democrats, while Republican-led states (and the Republican-dominated federal government) backpedal and obfuscate on climate issues as much as they can. It hasn't always been this way. Republican President Theodore Roosevelt kickstarted our modern national park, national monument, and national forest systems, while Republican President Richard Nixon (pre-Watergate) signed an array of landmark environmental bills into law, including the Clean Air Act and Clean Water Act. Even as recently as the 2000s, Republican President George W. Bush (despite his many, many faults) created the immense and majestic Papahānaumokuākea Marine National Monument, while Republican Governor Arnold Schwarzenegger of California supported and signed the Global Warming Solutions Act of 2006, kickstarting California's career as a leader on climate change action. However, under Trump, the battle lines have become clearly drawn. The modern Republican Party is ideologically committed to denying the scientific consensus on climate change and propping up the dying fossil fuel industry at all costs (and now, at least in Oregon, literally threatening violence rather than allowing action on climate change to pass), while the Democrats are, to varying degrees, committed to taking action on the clear and present danger of climate change and creating new renewable energy jobs. The science has been in on climate change for decades, and the technology and roadmap for a 100% renewable-powered society have been there for years (for example, see thesolutionsproject.org). The only obstacle now is political will to take action. It appears self-evident that, in the United States, any citizens wishing for climate change to be acknowledged as an issue, let alone addressed, have no option besides voting for the Democratic Party for all offices.