

Energy Matters

June 22, 2020

An official publication of



News from the Society

- AES has an open call for original or republished essays for its upcoming "What's On Your Mind?" issue of Energy Today. Please [submit](#) articles you've written to AES editors.

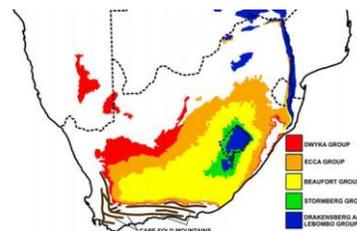
- July 13 - 17, the 10th annual [SISE Conference!](#) Co-hosted with the University of Illinois, Chicago, this summer's featured event on *Sustainable Infrastructure and the Gigaton Challenge*. [Contact us](#) if you are interested in an all-access Zoom-room pass or simply want more information about SISE, or if you are curious to know about [sponsoring](#) the event, panel, or a program.

Notice to all Members: If your membership is current, we will soon send out credentials that provide full access to the [restricted](#) sections of the website.



Fossil Fuels

Oil: The next elephant could be [the Kavango Basin](#) in South Africa, Botswana and Namibia. The region has never seen a drill bit, yet Canadian explorer Recon Africa has acquired this 6.3-million-acre basin 12-billion-barrel potential -- about the size and depth of Eagle Ford (*insert*).



Natural Gas: [PetroChina has discovered a huge natural gas belt](#) with an estimated reserve of over 1 trillion cubic meters in southwest China's Sichuan Province (*insert*).



Coal: [US coal consumption has been declining since its peak in 2007](#) of 1.1 billion short tons; in 2019, US coal consumption totaled 590 million tons. However, coking coal consumption (for steel, smelting iron, etc.) has not declined as dramatically.

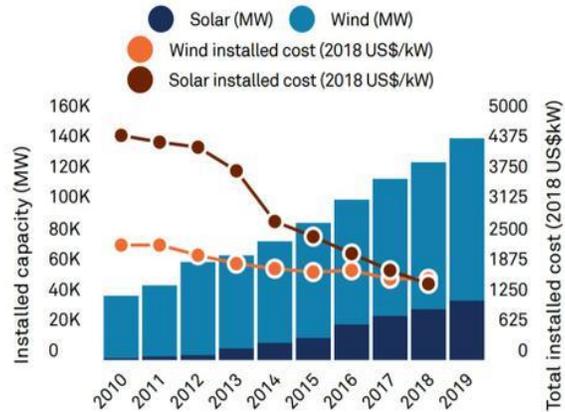
Carbon Capture: By the numbers and [map](#):

- The number of carbon capture projects planned, constructed, or operated worldwide has increased 32%, from 300 to 396.
- Of the 96 new additions, 62 are in the US.
- CCUS projects are found in 37 states and the District of Columbia.



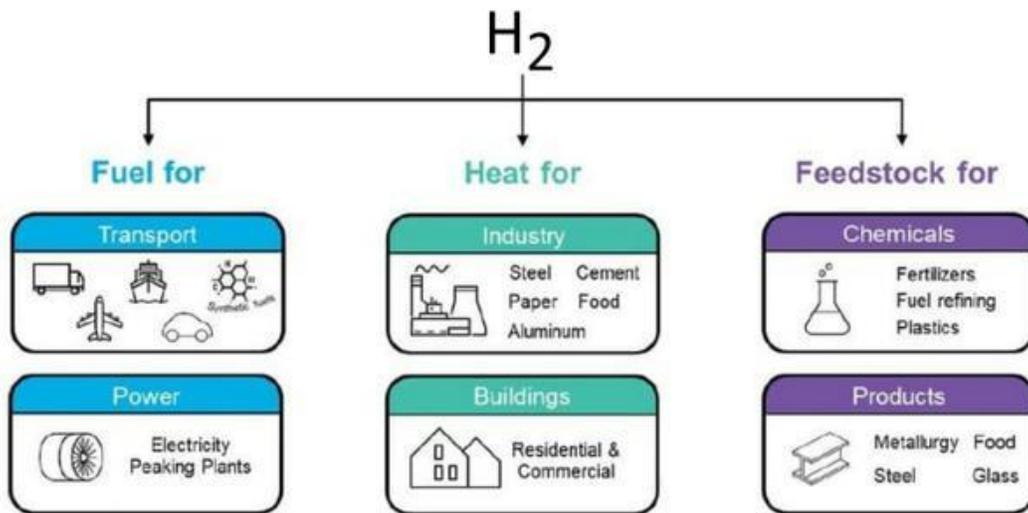
Low Carbon Energy

- **A comparison of wind and solar:** From 2010 through 2018, the average installed cost for a wind plant in the US dropped 29%; meanwhile, utility-scale solar farms saw installed costs decline 66%, bringing the average cost of utility-scale solar (on a per kilowatt basis) slightly below that for wind plants.



- Nuclear: The US International Development Finance Corporation is preparing to allow investment in nuclear power projects. This would enable the **DFC to offer financing for [small modular reactors \(SMRs\)](#) in developing countries.**

- **Spotlight: hydrogen**, a multiple purpose and efficient source of fuel, this element can power vehicles, store electricity, heat homes, and produce synthetic fuels such as methane or ammonia (*insert below*). *Note:* the production of hydrogen through water electrolyzers has increased, from 2 MWe (electric megawatts) in 2010 to 25 MWe in 2019.



- Related, **Germany unveiled a €9 billion economic stimulus package to [kick-start the hydrogen economy](#)** (about \$10 billion USD). *Note:* in 2019, renewables made up to 46 percent of the country's electricity production.



Policy

- In [Atlantic Coast Pipeline v. Cowpasture River Preservation](#), the US Supreme Court sided 7 - 2 with the developers of the pipeline to allow a portion of the 600 mile natural gas pipeline to pass underground and below the Appalachian trail. "Sometimes a complicated regulatory scheme may cause us to miss the forest for the trees, but at bottom, these cases boil down to a simple proposition: A trail is a trail, and land is land," wrote Justice Clarence Thomas in an opinion joined by Justices Roberts, Breyer, Alito, Gorsuch, and Kavanaugh; Ginsburg signed on to all but one part of the majority's opinion. Justices Sotomayor and Kagan dissented.

- In January 2017, the EPA listed [10 toxic chemicals](#) (linked to neurological illnesses, cancer, reproductive disorders, etc.) in need of risk evaluations and gave itself a June 2020 deadline to complete the studies. **The EPA will not meet its deadline.** The 10 chemicals are:

1. 1,4-Dioxane - a clear liquid with a pleasant odor used in cosmetics and shampoos
2. 1-Bromopropane - used in dry cleaning, degreasing, and aerosols
3. Asbestos - used in building (shingles, ceilings...) and friction products (brake pads...)
4. Carbon Tetrachloride - often used in dry cleaning establishments as a degreasing agent
5. Cyclic Aliphatic Bromide Cluster - a flame retardant used in construction materials
6. Methylene Chloride - used for paint stripping and pharmaceutical manufacturing
7. N-Methylpyrrolidone (NMP) - used to recover hydrocarbons from petrochemicals
8. Pigment Violet 29 - used in watercolor and acrylic paints, inks for printing, and solar cells
9. Trichloroethylene (TCE) - used to make refrigerants and other hydrofluorocarbons
10. Tetrachloroethylene - a dry-cleaning agent and used to make other chemicals.

- **Pacific Gas and Electric Co. entered "guilty" pleas to 84 counts of involuntary manslaughter** as the Butte County judge read aloud the names of each person who died when PG&E's equipment sparked the 2018 Camp Fire, California's deadliest wildfire.

- [Japan and Korea](#) have limited natural resources, which means they are energy dependent buyers of oil, coal, and natural gas (Japan imports 93% of all its source-energy); at the same time, both countries are leading centers for alternative energy technology RD&D.



Climate and Sustainability

- *Special report:* There are five massive (and many smaller) plastic gyres floating in every ocean on Earth (the Great Pacific Ocean Garbage Patch is twice the size of Texas); **new research has found massive amounts of plastic beneath the surface of each gyre, in the shape of an inverted cone:**

- The total plastic floating on the surface is about 1% of the total amount of plastic in the oceans (estimated at tens of millions of tons total).
- The types of plastics found in the depths matches the types on the surface, and there are microplastics at every depth sampled.
- Although plastic is usually buoyant, it eventually sinks and mixes with heavier sediment or becomes colonized by algae and other marine life — a process known as biofouling.
- Between 5 and 2,000 meters below the surface, the amount of small plastic pieces (5 cm or less) is 50%–80% of the total on the surface.

AES offers its Friends access to peer-reviewed first [evidence](#) of ocean gyre plastic fallout.



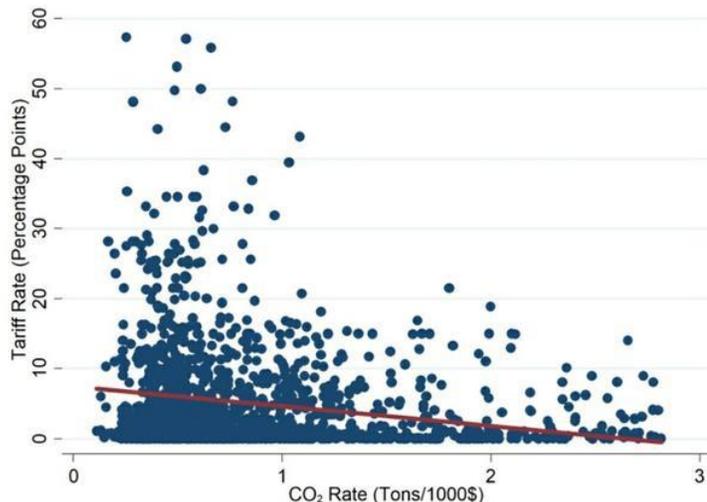
- Related, in 2019, many nations promised to reduce plastic use. However, in response to the COVID-19 pandemic, **many have postponed plastic reduction policies, especially in Asia:**

- Thailand has seen single-use plastic increase 30% this year.
- Bangkok consumed 62% more plastic in April than it did 12 months earlier.
- Bangladesh generated nearly 16,000 tons of hazardous plastic waste during the first month of its coronavirus lockdown.
- Singapore used an additional 1,470 tons of plastic waste from food packaging in April.
- China has dropped all efficiency and reduction [targets](#).



Research to Markets

- **Best [article](#) of 2020 nominee:** tariffs are usually lower for dirty goods (carbon-intensive) and are often higher on cleaner goods (less carbon-intensive). Ironically, countries with the largest trade-policy subsidies for CO₂ are places like Sweden and Germany, whose policies traditionally protect the environment. The countries with the smallest trade-policy subsidies for CO₂, like Saudi Arabia and Iran, are traditionally less concerned about the environment.



- The IPA Power Plant in Millard County, Utah, has purchased the first [hydrogen-capable](#) natural gas turbine, manufactured by Mitsubishi Hitachi.

- Agriculture has major soil, fertilizer and livestock problems. [EarthRenew's](#) new technology addresses all of **these issues**. First, the technology turns livestock waste into a new organic fertilizer and also uses the waste heat from its production process to generate more electricity that is then used for its own fertilizer operations ... an example of a "circular economy." Sourcing the manure is not a problem: for instance, the Netherlands has 1.8 million cows and has run out of space for the waste; the US has 95 million cattle and Brazil over 100 million. (Note: raw manure can contain potentially deadly food-borne pathogens such as E. coli, Salmonella, Listeria, and Campylobacter - EarthRenew technology kills these pathogens.)

- Nearly three-quarters of all oil, gas, solar, and wind industry workers are white; the percentages in **upper management of all energy sectors is even higher**.



Electricity, Power and Efficiency

- *Featured report:* **The global response to COVID-19 has added another layer of uncertainty to every energy sector:**

- Oil upstream E&P has declined significantly, which will reduce supply and drive prices higher. (The IEA projects -9 million bpd by 2025.)
- Worldwide investment in renewable energy is down 10%, especially utility-scale solar and wind and electricity grid infrastructure; this decline is occurring at the same time that global electricity demand has declined 5% worldwide.
- A significant portion of current energy investments are in digital efficiencies (i.e. smart meters, utility automation, EV charging infrastructure, the digital oilfield, etc.) For instance, about \$40 billion is invested in the "digital grid" (about 15% of global energy investment).
- The other primary investment is in hydrogen; the push is coming from governments in Europe, China, and Australia; in the US, venture capital is driving the investment in hydrogen is venture capital.

- Commuting to work costs the average US worker about \$2,600 a year. **If there are 80% fewer commuters for 3 months because of the pandemic, then about \$67 billion will NOT be spent on gasoline.**

- **Houston buys more electricity produced by renewable sources** than any other US city; moreover, renewable sources provide 92% of electricity for city properties (though that's only 1% of the total land in the city).

- Corporate renewable energy deals were signed in 23 different countries in 2019, but the US accounted for virtually all of the market's growth, and **Texas alone accounted for 5.5 gigawatts of those deals, more than Europe and Asia combined.**

- *Cybersecurity recommended event:* On June 30th, [Cyber Security for Critical Assets World Summit](#) will bring together (virtually) senior security leaders from 76+ countries worldwide. The 24-hour online event will follow the movement of the sun - starting with expert speakers in the APAC region and transitioning throughout MENA, Europe, LatAm and USA. The World's Oil & Gas, Energy, Utility, Power, Water, Chemical & Mining industries, will offer 4 hours of panel presentations for each region.



Quotes: I don't know...

"I want to know ... what happens after your statement?"

- Paula Glover, head of American Association of Blacks in Energy, responding to the outpouring of support for racial justice by energy companies.

"I don't know ... does he like to hold a grudge, or does he just like to Tweet?"

- Senator Lisa Murkowski (R-Alaska) said she isn't worried about retribution from President Donald Trump after he tweeted he would endorse any challenger with "a pulse" who would try to unseat her.

"I don't know ... both?"

- Ben van Beurden, CEO of Royal Dutch Shell, when asked if the market has his "Peak Supply" or "Peak Demand."