

# ENERGY MATTERS

Soundbite summaries of the energy news you need to know

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September 12, 2022

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## - The Power Read -

- **Natural gas:** It appears that China is buying Russian LNG at a discount and reselling it as "Chinese LNG" to Europe at marked-up prices.
- **Carbon capture:** The carbon removal certification ecosystem is a mess.
- **Renewables:** Lithium prices continue to increase significantly.
- **Policy:** Almost all states that have recently passed energy-related legislation are focused on lowering emissions.
- **Climate:** Emissions in China have fallen for 4 consecutive quarters.
- **Electricity:** All of Europe has been affected by an energy crisis, but each country is responding very differently.

## - News from the Society -

- *Sneak peek:* AES will soon publish the **Hydrogen SME Watch List**, a global directory of thought leaders shaping the next energy-tech revolution. Members will receive the report for free. [Contact us](#) for more information.

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## - Fossil Fuels -

### - Oil -

- **OPEC+ agreed to an oil supply cut just weeks after agreeing to a production increase** following a request from US President Joe Biden for help bringing down global oil prices. The reversal is inconsequential in terms of volume but sends a strong signal that OPEC+ has returned to its [traditional](#) market/price production strategy.

## - Natural gas -

- *Special report:* China is buying a lot of Russian natural gas (+29% y/y). This is not to be confused with pipeline LNG from Russia to China, which has also increased about 63%. *Why?* China has lower demand for energy due to a broad, macro-economic downturn. **It appears that China is buying the Russian LNG at a discount and [reselling](#) it as "Chinese LNG" to Europe at marked-up prices.** For instance, China's JOVO Group and Sinopec, big LNG traders, recently sold cargoes of LNG to European buyers, and the latter acknowledged in an earnings call that it has been "channeling excess LNG to international markets." (Russia has [discounted](#) the price by 50%, yet is still making a profit.)

## - Coal and mining -

- **The 6 biggest copper [mines](#) in the world** (*note:* Members have a subscription to *Energy Today*, including the recent article "[The Future of Copper](#).")

- Chuquibambilla, Chile
- Bingham Canyon Mine, US
- Grasberg Mine, Indonesia
- Escondida Quarry, Chile
- Sibai Quarry, Russia
- Toquepala Mine, Peru



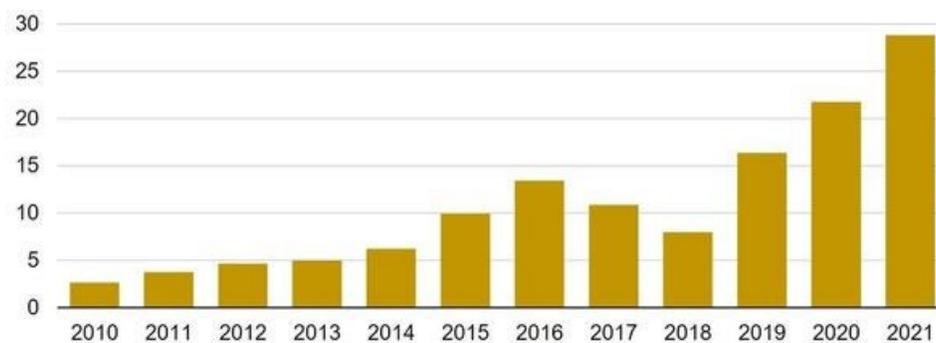
## - Carbon capture and removal -

- **The carbon removal certification ecosystem is a mess.** There are 125 certification methodologies from 30 different organizations across 23 CDR approaches. Editors recommend the ecosystem [map](#) developed at Arizona State University. [AES Members](#) have access to the peer-reviewed research on the carbon certification and standards ecosystem.

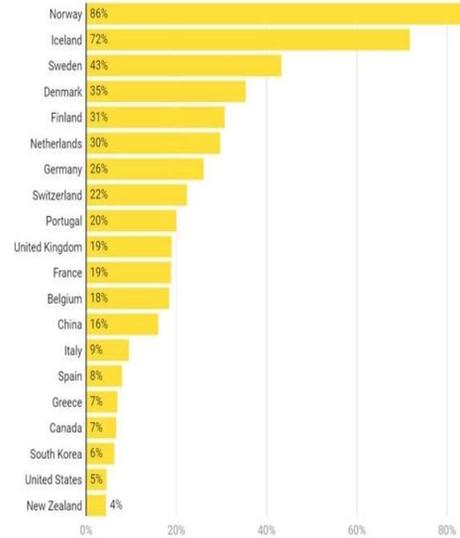
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## No- / Low-Carbon and Renewable Energy

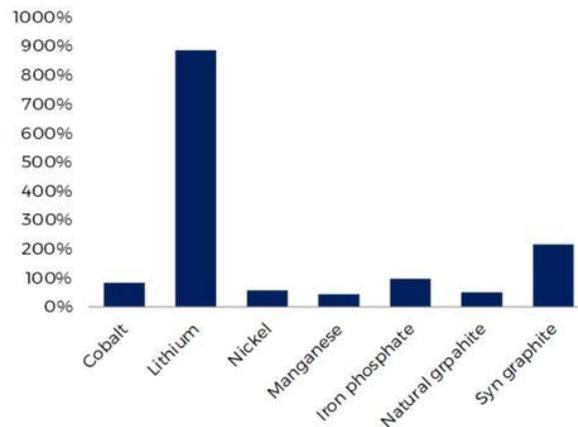
- **US shipments of solar photovoltaic modules (PV solar panels) [rose](#) to a record electricity-generating capacity of 28.8 million peak kilowatts (kW) in 2021.** (Continued domestic demand was the primary cause of the increase.) *Insert:* annual US solar photovoltaic shipments, in million peak kilowatts.



- Electric cars made up nearly 10% of [total car sales](#) globally last year. *Insert right:* the top 20 countries for EV sales in 2021.



- The cost of all raw materials to manufacture batteries has gone up significantly in the last two years. Lithium prices have [increased](#) the most:



## - Energy Policy & Geopolitics -

### - Spotlight on states (since the US Congress is in recess) -

- Almost all states that have recently passed energy-related legislation are [focused](#) on lowering emissions:

- [California](#): \$54 billion in funding for programs that cut emissions, including an extension of the Diablo Canyon nuclear power plant (the only facility in the state) for five more years.
- [New York](#): three legislative packages in support of clean energy technologies, building energy efficiencies, and reduction of greenhouse gas emissions.
- [Massachusetts](#): a wide range of policies focused on electrifying vehicles, reducing fossil fuel connections in new construction, and supporting the development of offshore wind (however, the state rejected subsidies to help offset energy costs for multi-family housing units and low-income families).
- [Hawaii](#): four energy bills that support the development of no emissions by 2045, starting with an immediate ban on all coal fired power.

- In addition, **California will restrict and eventually ban the sale of gasoline-powered cars by 2035**; perhaps more significantly, [17 other states](#) have already agreed to follow California's plan. This isn't California's only regulatory measure on transportation. On January 1, 2023, the state will **ban** from all state ports any semi-truck or diesel commercial vehicle with an engine made before 2011. (Note: approximately 23% of all drayage cargo trucks in California do not comply with this new rule.)

### - Global energy politics -

- [Japan](#) passed the GX green transformation plan, which restarts and builds more nuclear plants and also expands the development of low emission technologies.

- [China](#) is expanding the development of renewables and electric vehicles in spite of a significant economic contraction.

- [India](#) is preparing a carbon market as well as new energy efficiency standards for buildings and appliances.

- [Venezuela](#), which recently began shipping oil and gas to Europe, has suspended all trade until they get better terms.

### - And then there is Russia ... -

- **Russia's invasion of Ukraine has created strange geopolitical conditions.** For instance:

- **Russia bombed the Zaporizhzhia nuclear power plant in Ukraine** (Europe's largest nuclear reactor). Note: according to former US Secretary of Energy and AES Member Ernie Moniz, growing interest in nuclear power would probably [erode](#) if Russia caused a nuclear meltdown.
- Transneft (a Russian NOC) has stopped paying Ukraine the \$15 million/month transit fee to keep the pipeline system open (*insert*), and yet the pipeline is [still in operation](#).



- The chairman of Russian oil and gas giant Lukoil [died](#) after falling out of the window of a hospital in Moscow. Perhaps related, the Chairman had recently called "for the soonest termination of the armed conflict" in Ukraine.

## - Climate and Sustainability -

- **There are 11 sensitive "climate tipping points" to watch** (source: Energy Futures Initiative, [Clearing the Air](#), p. 43 of 245):

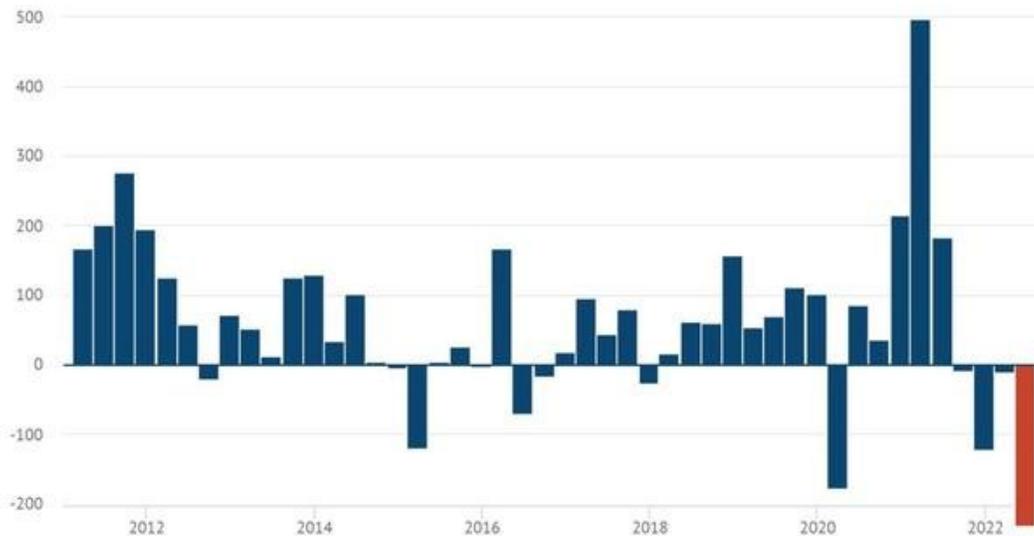
1. Melt of the Greenland ice shelf
2. Boreal (Canada and Russia) forest dieback
3. Dieback (and clearcutting) of the Amazon rainforest
4. Increasing El Nino/Southern Oscillation (ENSP) rainfall variability
5. Instability of West Antarctic ice shelf
6. Arctic sea-ice loss
7. Permafrost and tundra loss (Russia)
8. Increasing Indian monsoon multi-stability
9. Sahara desert greening
10. West African monsoon shift
11. Changes in Antarctic bottom water formations

- **Greenhouse gas concentrations, global sea levels, and ocean heat all set record highs in 2021.** AES members have access to the peer-reviewed research and [report](#) by NOAA (this is the 32nd edition, which had 503 reviewers from 60 countries).

- **China's carbon emissions fell about 8% (or 230MtCO<sub>2</sub>)** in the April-to-June quarter compared with the same period last year — it was the [fourth consecutive quarter](#) in which emissions have fallen in China.

(Insert: quarterly emissions from energy, in million tons of CO<sub>2</sub>.) Emission reductions were driven by:

- a 44% decline in construction projects this quarter and a 33% decline in the previous quarter (aka less steel and cement output due to the real estate slump);
- a decline in transport oil consumption caused by Covid-19 control measures;
- lower electricity consumption growth.

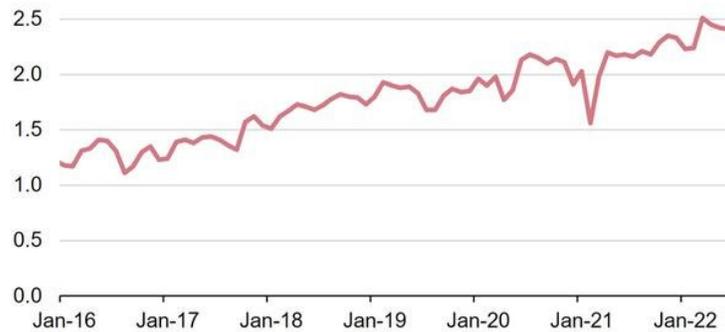


- *Retrospective:* On Sept. 1, 1972 (50 years ago), meteorologist **John Sawyer published "Man-made carbon dioxide and the greenhouse effect" in *Nature***, the [first formal study](#) of the impact that human activity has had on the atmosphere and the climate.

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## - Research and Markets -

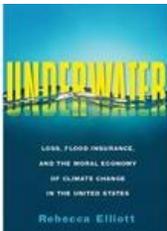
- Ethane production has been [increasing](#) in the US for the past five years and often sets monthly records (note: ethane, a hydrocarbon component derived from natural gas, is used to manufacture plastics). *Insert:* monthly US ethane production, in million barrels per day.



- [Contact us](#) if you are interested in the forthcoming AES report *Power Players: The Influencers Investors Follow*. (Note: Members will receive the report for free.)

- Sneak peek: climate tech investors are enthusiastic about the Inflation Reduction Act, the largest investment in decarbonization the US has ever made.
- Context: Climate tech was already a hot market; venture-level funding for climate tech topped \$16 billion in 2021, more than double the prior year, and leading PE firms raised billions to finance low- and no-carbon projects.
- Looking ahead: investors say the bill will reduce the premium on early-stage energy-tech deployment, speed up the network effect of electric vehicles and renewable electricity, and provide capital for subsectors that venture and private equity tend to avoid, like hard-tech.

- A materials sciences research group at UC Santa Cruz has developed a **method of using aluminum nanoparticles to strip the oxygen from water molecules and leave hydrogen gas**; the process yields large amounts of [hydrogen](#), and it works at room temperature. (Thank you AES Member Mike Russo for the recommendation.)



- AES recommends [Underwater: Loss, Flood Insurance and the Moral Economy of Climate Change in the United States](#), by Rebecca Elliott.

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## - Electricity & Power -

- While all of Europe has been affected by an energy crisis (low supply and high prices), each country is [responding](#) very differently:

- [Italy](#): An aid package of €17 billion to offset rising energy prices plus €35 billion to offset general cost of living increases; a price-cap on gas; and, an additional €200 to low and middle-income families. Meanwhile, the government plans to tax any company that "profits from higher energy prices."
- [France](#): "Sobriety measure" that cap wholesale electricity price increases at 4%, and a one-off payment of €100 to all citizens.

- [Denmark](#): a one-time payment of €417 to elderly and low income citizens; may set a cap on energy prices.
- [Germany](#): relief packages of €30 billion; lower value-added tax on energy from 19% to 7%; subsidized public transportation tickets; €300 one-time increase to all paychecks; one-time grant of €100 per child and €270 for low income citizens. However, all households that use natural gas will have to pay an additional tax of €500/year.
- [Norway](#): citizens pay 100% of the cost of electricity when the price is less than 70 kroner (€7) per kWh, but the government pays 80% of the total when prices go above the 70 kroner threshold.
- [Sweden](#): A fund of 6 billion Swedish kroner (€559 million) paid to households worst hit by the surge in electricity prices, identified as either low-income or regions with the highest energy price increases.
- [UK](#): Hit harder than any country but has done the least; the new government has promised to freeze energy bills and give a £400 rebate to every household.

- The DoE has identified 12 new US "[island](#)" communities that are not and cannot connect to the grid due to geographic isolation.




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## - Universities in the Spotlight -

- September 7-9, **MIT** is hosting a virtual event on "[Mining, the Environment, and Society](#)."
- The UNSDSN (with the County of San Diego, **UC San Diego**, and [contributions](#) from Jim Williams at **USF**) has developed a [toolkit and guide](#) to help with the decarbonization of local and community economies.
- The **University of Arkansas** is beginning to [integrate](#) solar energy into its energy mix.
- ROSEI at **Johns Hopkins** is launching an open access windfarm simulation [resource](#).
- The **Yale** Center for Environmental Law & Policy released its Environmental Performance [Index](#) - only the UK and Denmark are on track for net-zero emissions by 2050.
- The **Georgetown** Climate Center has released its recorded [webinar](#) on "Understanding the Supreme Court's Decision in West Virginia v. EPA."

- The [Energy and Climate Center](#) at **Pace University** recently completed a study on the impact of solar farming on small farms and their communities.
- **The Vermont Law and Graduate School** Institute for Energy and the Environment ([IEE](#)) specializes in graduate research community energy development.
- The Sustainability Hub at **Binghamton University** recently launched The Equitable Sustainability Literacy [Guide](#).
- The Climate Solutions Lab at **Brown University** developed a [Climate Opportunity Map](#) to show how the US can benefit from investment in clean energy and climate solutions.

## - Quotes -

### On the energy crisis in Europe

- "This energy crisis is a wakeup call."  
- Kadri Simson, Energy Commissioner for the European Commission
- "Russia's weaponization of energy will test the solidarity between EU member states."  
Katharina Krebs, CNN energy correspondent
- "To think that this is just one winter is a fantasy that we should put aside."  
- Ben van Beurden, CEO of Shell
- "Forget showering, it's eat or heat."  
- Most anyone in England
- "We can say that Russia is flawlessly fulfilling all contractual obligations."  
- Kremlin spokesman Dmitry Peskov

## - Bulletin Board -

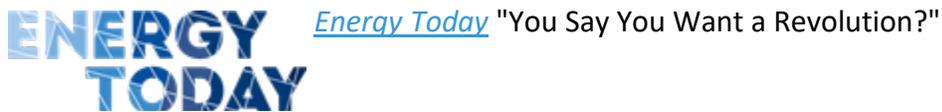
Reach 135,000+ readers with your message.

[Members](#) of AES can post an announcement for free! [Contact us](#) for more information.

- AES recommends [Climate Week](#) in NYC, September 19 - 25, 2022.
- **Honeywell's Sustainable Building Technologies** (SBT) is hiring for a global [Senior Director Solutions Architect](#).
- On Oct. 18, Oct. 26 and Nov. 3, AASHE will host "The Urgency of Now," a global conference on sustainability solutions in higher education. [Contact us](#) for a discount code or a special rate for a full conference pass.
- **Clearpath** has completed a white paper that examines the development of wind power in [Iowa](#), the #2 wind state in the US. The study highlights proponents and advocates of the industry and its plans to expand in the future.
- **Unearth** is a dynamic Mobile GIS that connects assets, data, and field teams for critical infrastructure providers. Start your [free](#) trial today.

- **Ubiquitous Energy**, a leader in transparent solar technology, is [developing](#) energy generating windows and door products.
- **Orrick** has a recorded [webinar](#) on the Inflation Reduction Act, with emphasis on hydrogen.
- **Sunrun**, a residential solar and battery storage installer in the US, has partnered with Ford to launch a new [home electric vehicle \(EV\) charger](#) that is compatible with any EV model.
- If you have [data](#) but not the talent or staff to make it valuable, please consider the **proSkale** platform— it helps organizations manage and invest their data ... like cash.

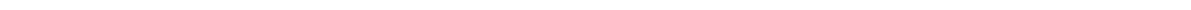
- In case you missed it -



- Gratitude -

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