



Dispatches From The Wild, Weird World Of Humanity And Its Biosphere

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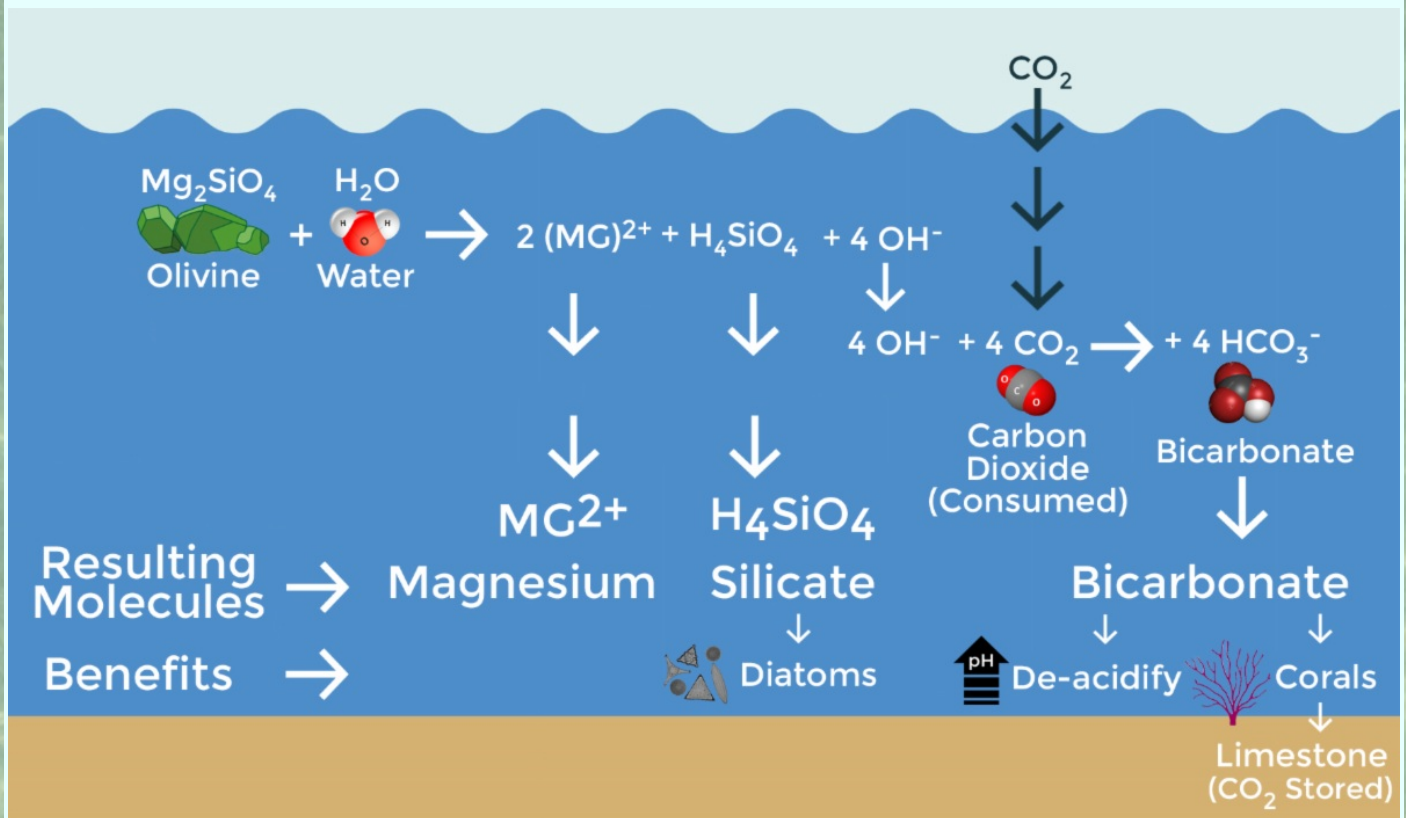
Canary Islands



Off the coast of Spain's Canary Islands, an EU-funded biogeochemical research team is trialing a localized, controlled form of geoengineering, with the potential to protect seawater from ocean acidification and sequester more carbon from the atmosphere at the same time. Some background: carbon dioxide in the atmosphere reacts with seawater to form carbonic acid, making the oceans slightly more acidic. And humans' burning of fossil fuels has added lots more carbon dioxide to the atmosphere, resulting in highly harmful [ocean acidification](#).

The ocean's pH has [already fallen by 0.1 pH units](#)-which may not sound like a lot, but that's a 30% increase in acidity, on a logarithmic scale.

[The researchers in the Canary Islands](#) have constructed nine plastic "mesocosms," filled with 8,000 liters of local seawater (pictured above) and had added different quantities of dissolved limestone, a highly alkaline mineral, to counteract ocean acidification and promote carbon sequestration. (Through a series of chemical reactions, adding alkaline minerals to seawater makes sequestered CO₂ more likely to end up as bicarbonate, which is easily added to coral skeletons or sequestered into limestone, rather than corrosive carbonic acid). The researchers measured 45 parameters, from pH to plankton health, to quantify the exact changes brought to the seawater chemistry and the microorganism ecosystems within the mesocosms. The long-term goal is to see whether crushed-mineral ocean alkalization could be scaled up massively to help solve climate change and ocean acidification in one fairly simple stroke. Although this would require a massive global mining effort, "back-of-the-envelope" calculations indicate it [may be feasible](#).



The next step in the research project will bring such a possibility closer to reality, by using [much larger mesocosms](#) of 50,000 liters each (enough to test the effect of the water changes on larger organisms, like fish), situating them in more plankton-rich waters off Norway, and using the more plentiful and easier to process olivine as the key alkalizing mineral instead of limestone. An unrelated research program conducted by Californian company [Project Vesta](#) will also be testing olivine alkalization at ocean sites off New York, North Carolina, India, and the northern Caribbean over the next few years. ([See the diagram above, from Project Vesta, for a more in-depth look at the biology, geology, and chemistry involved](#)). This is a highly exciting research arena with the potential to scale up to a major source of carbon sequestration, and help rebalance the chemistry of Earth's oceans into the bargain! Fascinating news, worth keeping an eye on.



Renewables Revolution: Tradeoffs



America's biggest-ever solar farm, set to include [2.85 million solar panels](#), cover 13,000 acres, create 500 construction and 50 permanent jobs, and eventually produce 400 megawatts of power (enough capacity to power a quarter-million Indianan homes!), is [currently being built in Indiana](#), a

historically coal-dominated state. ([Pictured](#): what the Mammoth Solar Farm may look like when it's completed in 2023). Great news! However, it's worth noting that the work has been dogged by a series of so-far-unsuccessful lawsuits from local farmers, who fear that the project will damage their crops, despite no evidence emerging of how that would be possible.

This is just one example of a trend where local activists are often ready to mobilize against new renewables projects, despite the critical importance for the planet of replacing fossil fuels with clean energy.

On January 6, 2022, a federal judge temporarily halted the construction of two geothermal power plants being built in the Dixie Meadows area of **Nevada**, in response to a lawsuit brought by the Center for Biological Diversity and the Fallon Paiute-Shoshone Tribe concerned that they would negatively impact local hot springs viewed as sacred. As immediately sympathetic as an appeal to historic sacred spaces is, we do really need to build out more geothermal power-it's an excellent, low-physical footprint, near-zero emissions, always-on complement to wind and solar, and [new technology development has finally made it competitive](#). And the best places for geothermal are places where there's lots of heat close to the surface-the kind of places that tend to produce natural hot springs.

A very similar story is taking place further north in Nevada, where [local cattle ranchers](#) and the [Fort McDermitt Paiute and Shoshone Tribe](#) are lobbying to prevent a lithium mine at Thacker Pass. For context, lithium demand is [projected to grow 40-fold by 2040](#) under a sustainable transition scenario (it's crucial for electric cars), The Thacker Pass mine and others across the lithium-rich American West are vital to stopping climate change.

While acknowledging that the indigenous peoples' groups involved here have been the victims of atrocities in the past and thus have very good historical reasons for not trusting outsiders' plans, both the geothermal and lithium mine projects at issue are on US public land, not tribal land. There's a strong case here that the needs of the many for clean energy outweigh the wishes of the

few. Fortunately for decarbonization, both of these projects still stand a strong chance of going ahead.

Over in **Germany**, the new Scholz coalition government (which includes the Green Party) is [planning to build 1,000 to 1,500 new wind turbines per year](#)-a key step for moving the historically coal-dependent country towards decarbonization. However, this much-needed goal is facing some opposition from environmental groups upset about wind turbines sometimes killing birds-[despite the fact](#) that in Germany, window collisions kill over 100 times as many birds as wind turbine collisions, and car collisions over 70 times as many. Not to mention, of course, that wind turbines are sorely needed to prevent massive climate shifts that would greatly harm bird species-and that [promising new research from Norway](#) indicates that painting one wind turbine blade black may be able to reduce bird deaths by 70%.

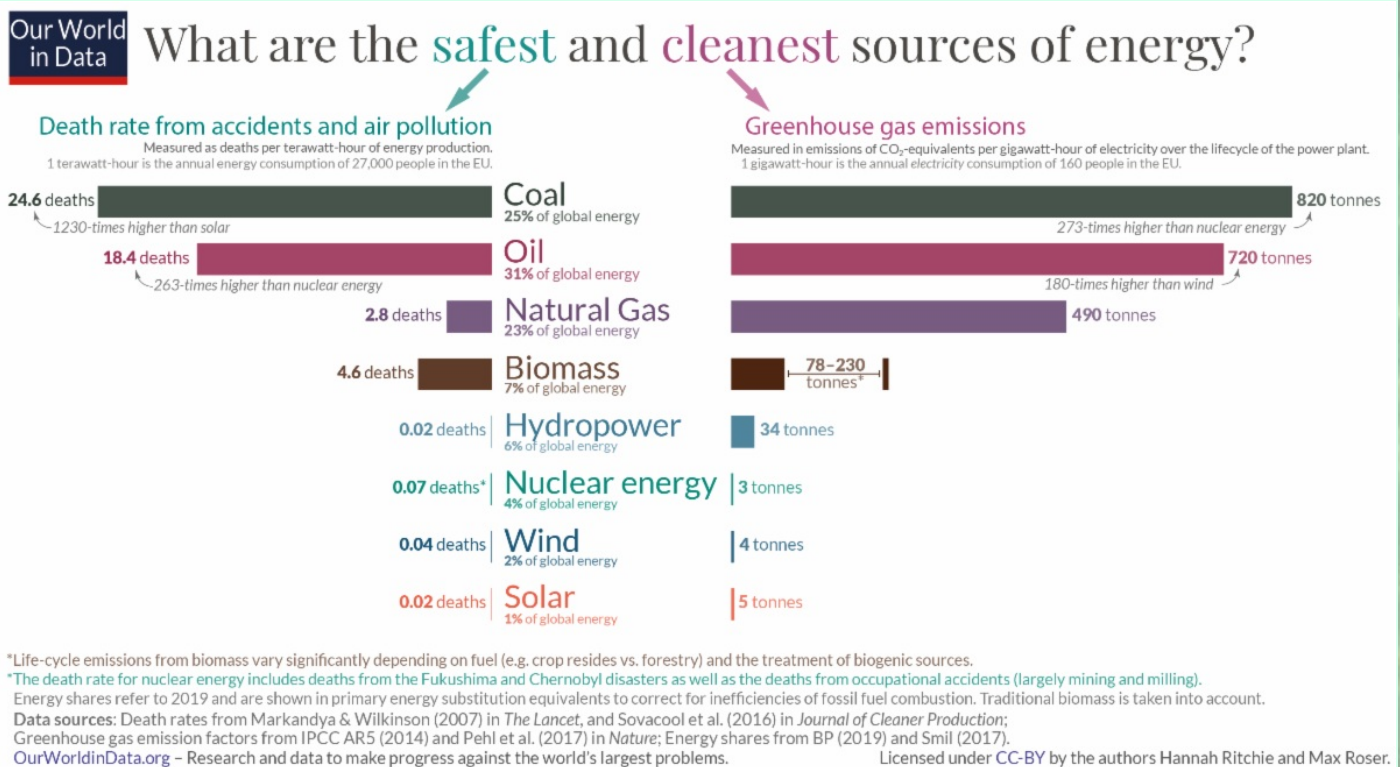
And finally, in this writer's home state of **Maine**, three ongoing conflicts show the danger of activist groups opposing renewable energy development. In a recent highly controversial referendum, which saw the Maine Sierra Club joining [the same side as oil companies](#), Mainers [voted to reject a proposed transmission line that would have brought low-carbon hydroelectric energy from Quebec through to Massachusetts](#). There were some specific local factors, such as a history of poor service by Central Maine Power, that helped mobilize opposition to the project. However, [the facts remain](#): this transmission line would have helped replace fossil fuels in the New England grid, less than 1% of the area of forest cut down for timber every year would have been affected by power line construction, and Maine stood to gain hundreds of millions in funds for other energy initiatives (like EV chargers) as compensation for use of state land. The Biden Administration and Governor Mills supported the transmission line, and it's hard not to see it as a [big missed opportunity](#).

Furthermore, Maine's potentially nation-leading buildout of offshore wind turbines is being opposed by [aggressive local lobstermen groups](#)-despite the fact that Governor Mills has already made a concession and banned offshore wind turbines in [the three-mile near-coastal zone](#) where most lobster is caught (while keeping projects in federal waters moving forward!), and that recent studies indicate that [wind turbines actually increase the density of fishable marine wildlife](#), by providing a new surface for base-of-the-food-chain organisms like seaweed to grow on. Fortunately, in this case wind turbine development is still going forward, for now.

And finally, a [world-class lithium deposit](#) was recently discovered in Newry, Maine. If developed, this could supply a big chunk of world lithium demand while keeping mining operations safely under a strong environmental and worker-safety regulatory regime, as lithium from Maine would be a lot more ethically produced than lithium from China or the Congo. However, it seems likely that Maine's strong environmental activist community could prevent it from ever being utilized if they decide to oppose such a (still hypothetical) mining project.

In sum, the need to build out renewable energy is creating an uncomfortable tension within the environmental movement. In a lot of land-use conflicts today, big international corporations trying to build things are now often on the right

side of an environmental cost/benefit calculus, and well-meaning activists like farmers, Native American tribes, bird conservationists, and other sympathetic, even inspirational-seeming community groups are arguably holding up much-needed progress with insufficient evidence of significant harm. This is an awkward situation for environmental groups who have built their brands, media profiles, and institutional cultures on being activists opposing big energy projects. Indeed, this is a weird place to be for this writer, who for years has greatly admired heroic environmental activist campaigns, from John Muir's struggle to preserve Yosemite Valley in the 1890s to Greenpeace's noble anti-whaling voyages in the 1980s to the Sierra Club's extremely successful Beyond Coal initiative in the 2010s. Those were awesome, and anti-fossil fuels activism continues to be awesome-but, very simplistically speaking, the pace of climate change now demands that we build lots more good stuff to help the planet, in addition to stopping bad stuff from happening. It feels strange, even a little wrong, to be praising big corporate developments winning out over local activists under any circumstances, but we've got to remember the bigger picture here. If one is opposed to building more renewables, that's by default a demand that we stick with or expand a worse form of energy ([see the amazing chart below!](#)). Getting lots of clean electricity up and running as fast as possible over the next decade is [the single most important thing we can do to slow climate change](#), and it simply *must* take priority over almost any other land-use concern. Environmental and community groups that don't recognize this may end up placing themselves on the wrong side of history.

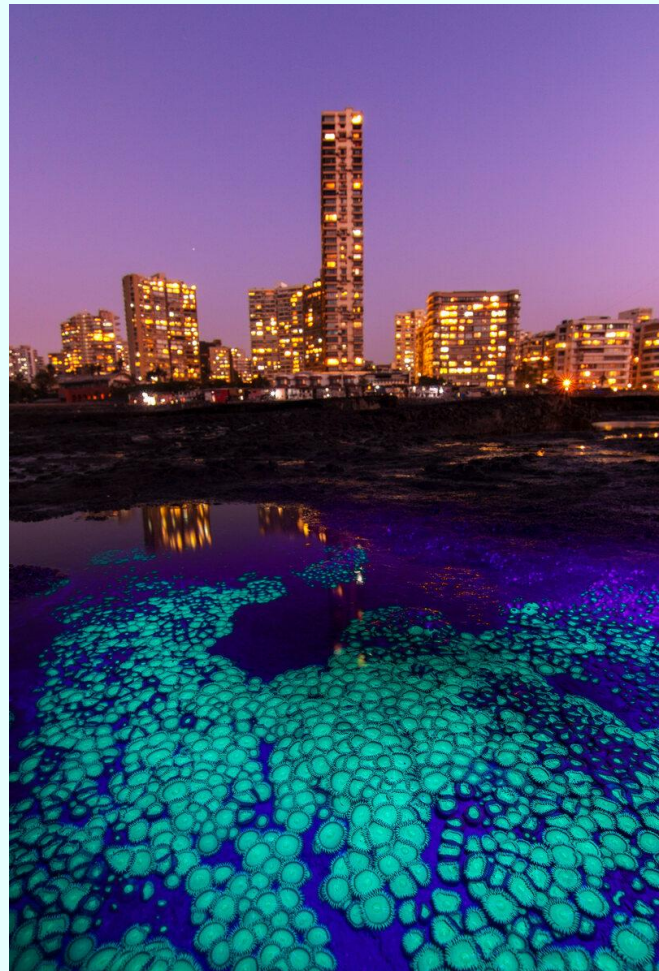


Postscript: as this newsletter's readership includes many leading environmental activists and experts on environmental regulation, as well as leading thinkers on land use questions in Maine, *The Weekly Anthropocene* *strongly* encourages readers to share their perspectives on this issue! This writer would be more than happy to print any reader letters on the tradeoffs around renewables development, especially those that make a strong argument opposing any of the



Mumbai, India

A small team of dedicated citizen scientists are [working to photograph and spread the word](#) of the surprising richness of wildlife on the coasts of the immense Indian city of Mumbai. The [Marine Life of Mumbai](#) volunteer citizen science collective has documented flamingoes, bioluminescent soft corals (pictured), moray eels, octopuses, sea slugs, and more thriving amidst the urban coastline, right next to a city of over 20 million people. As leading collective member and award-winning photographer Sarang Naik [told Atlas Obscura](#), "The main thing is to document as much as we can, upload it to [iNaturalist](#) and other [citizen science] sites, and encourage people to come to the shores and see for themselves this beautiful nature we have, right in the city." Awesome news!



The Weekly Anthropocene

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