the weekly anthropocene

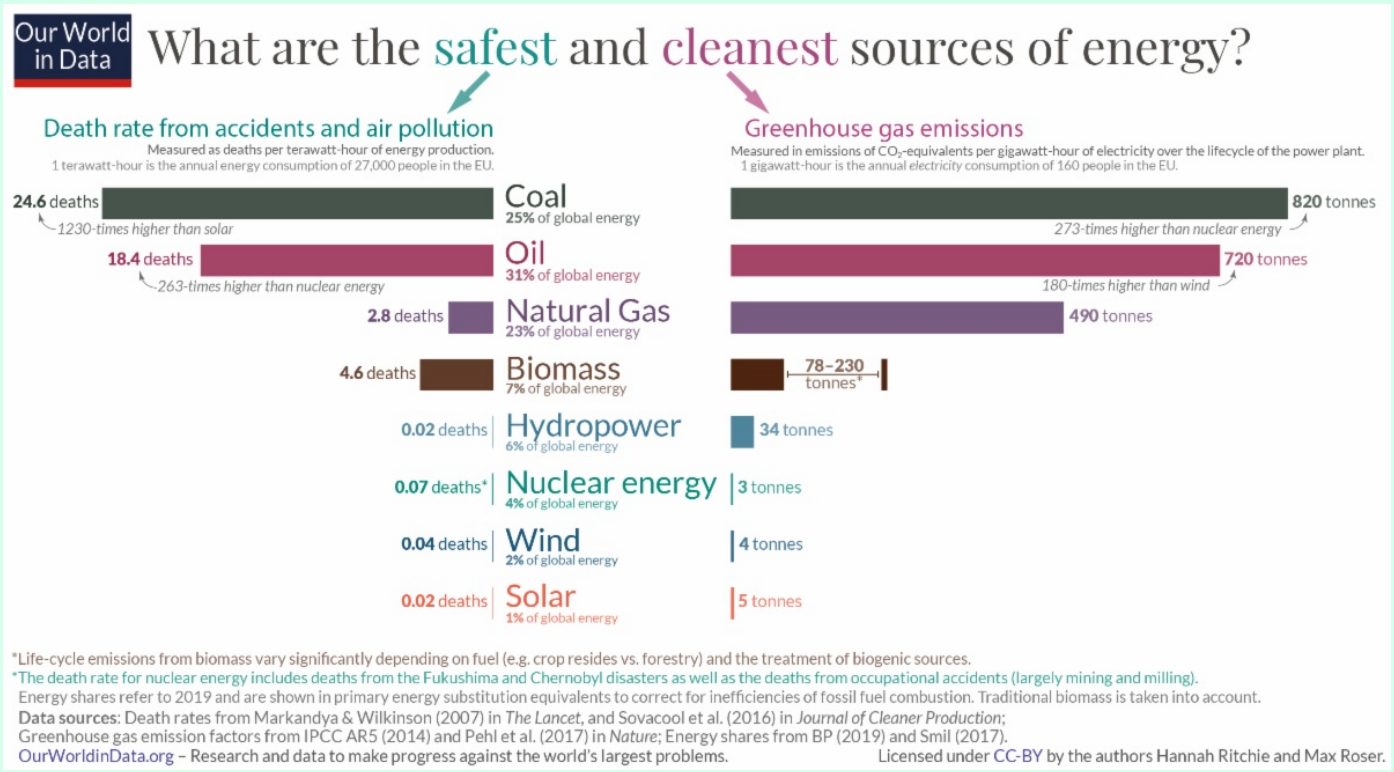
Dispatches From The Wild, Weird World Of Humanity And Its Biosphere

December 29 2021

FootPrint Coalition Science Engine.

Actor Robert Downey Jr. is best known for playing super-inventor Tony Stark in the Marvel Cinematic Universe. Now, he's trying to promote world-saving technological innovation in real life, spearheading a new environmental research funding initiative called the FootPrint Coalition Science Engine. The project is intended to provided sources of funding for pushing-the-envelope research that might have trouble getting through laborious traditional grant processes, inspired by the "Fast Grants" created to fund emergency COVID research and the experience of mRNA pioneer Dr. Katalin Karikó receiving little institutional support for research that would eventually become critical in developing the COVID-19 vaccines.
The five funding categories for the first wave of the FootPrint Coalition Science Engine include some of the most critical research topics of the Anthropocene: cellular agriculture, conservation biotech, community science and environmental justice, applications of indigenous peoples' traditional knowledge, and the use of artificial intelligence in environmental research. Any scientist can apply and submit their research plan, and each category has an experienced "Science Lead" who can personally authorize grants at their discretion, avoiding the inherent conservatism of deciding by committee. (For example, Ryan Phelan of the incredible Revive & Restore organization is co-Science Lead for the conservation biotech category). Each of the five categories starts with $50,000 to disburse-a relatively quite small amount, but an excellent model for expediting funding of ambitious new science! Great news.

Nuclear Power

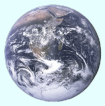


Contrary to popular belief, nuclear power is actually one of the best energy sources around, very similar to wind and solar in terms of safety and low greenhouse gas emissions. (See the chart above: even when you factor in the Chernobyl and Fukushima events, nuclear power kills *far* fewer people than air pollution-heavy coal, oil, and natural gas, or logging-dependent biomass). Renewable energy is still being built out at a rapid pace and is unquestionably the primary energy source of the future and our best shot at decarbonizing to avoid catastrophic climate change; for example, new wind and solar power alone accounted for 86% of the over 25,000 megawatts of new US electricity generating capacity built in January-October 2021, compared to about 14% in new fossil gas and *zero* new nuclear built. However, after decades of anti-nuclear activism resulting in halted or reversed development, nuclear power may be finally coming into its own as a partner for renewables. The background here is one of poor cost/benefit calculations being made due to relatively unfounded public dislike of nuclear: for example, Germany's closure of nuclear plants after Fukushima has led to a "decarbonization treadmill" in which rapid renewable buildout is employed just to replace already carbon-free nuclear, without cutting into fossil fuels' share of electricity generation as much as needed. Many are concerned that California is making a smaller version of the same mistake with its plan to shut down the Diablo Canyon nuclear power plant ahead of schedule, despite a coalition of scientists and the Biden Administration fighting to keep it around as a source of carbon-free energy. However, around the world, new designs and political support are helping keep nuclear in the "quiver" of carbon-free energy sources. (Before we review the latest news, keep in mind the caveats and the broader perspective here: nuclear power plants have a *long* history of ending up billions of dollars over budget and years behind

schedule, and the cost of electricity from new nuclear power plants has risen by 26% between 2010 and 2019 even as the costs of solar, wind, and battery tech have plummeted massively. The economic reality bears that out-see the link above about zero new nuclear power coming online in the US in January-October 2021. Researchers have also calculated that there's no way that nuclear can be built fast enough and cheaply enough to effectively decarbonize the economy by itself. We're talking about a potentially useful complement to renewables, not a new savior-but that's still quite important and useful!).

The incoming **Netherlands** coalition government is considering building two new nuclear reactors, as part of its preexisting decarbonization plan to reach 60% emissions reduction by 2030 and carbon neutrality by 2050. **Finland** is about to turn out and start electricity production from its newly-built nuclear power plant. New, smaller, and more innovative nuclear reactor designs are close to being built in **Washington State** and **Wyoming**. **China** is reportedly building dozens of new nuclear power plants as part of its long-term plan to transition away from coal, alongside a massive 100-gigawatt (100,000 megawatt) new solar and wind complex. And-whisper it-promising new tokamak designs from MIT coupled with increased private funding have some scientists hoping that humanity may at long last be on the brink of commercially viable nuclear fusion power ("on the brink" here meaning "maybe in a decade or so"), after decades of unsuccessful attempts and agonizingly slow technological advancement.

In sum, the politics and technology of nuclear power will remain fundamentally a sideshow in the epic global death match between renewables and fossil fuels-but it's starting to become a helpful sideshow instead of a frustrating one, and there's a chance it could become a bigger deal in the 2030s. Great news-we need all the carbon-free power we can get!



Turkey

The Batman River loach (*Paraschistura chrysicristinae,* pictured above) was a tiny, stripy critically endangered freshwater fish last seen in 1974, and feared extinct. This year, on October 16th, Turkish ichthyologists Cüneyt Kaya and Münevver Oral (pictured) rediscovered the species, netting 14 individuals in the Sarim Stream and another 9 in the Han Stream. (And yes, the loach lives in the watershed and tributaries of the Batman River, itself a tributary of the Tigris which flows through Turkey's Batman Province. The use of this place-name predates the DC Comics superhero). This is an awesome example of local scientists going the extra mile to rediscover a species-which now may gain enough attention to be protected and aided by humans in the Anthropocene!

The Weekly Anthropocene

Email Address:
samuel.matey@maine.edu

Contact Us Today