



the weekly anthropocene



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

December 15 2021

The Great Barrier Reef



Coral reefs, as this newsletter has several times discussed, are having a terrible Anthropocene, beset by warming and acidifying waters, plastic pollution spreading diseases, and direct harm from overfishing and dredging. [Earth has lost half of its coral reefs since 1950](#), and global warming of 2 degrees Celsius (one of the more optimistic possible outcomes, since we're already around 1 degrees C) [could wipe out 99% of all coral reefs](#).

So the baseline expected future for coral is pretty bad. However, there are some signs of hope. For a few days in late November, Australia's **Great Barrier Reef** (over two-thirds of which was damaged by bleaching events in 2016 and 2017) experienced a [mass spawning event](#) (pictured), with corals across hundreds of miles of reef casting billions of sperm and eggs into the sea to combine and form new larvae. And among the breeding coral were a few very special coral colonies that may represent hope for their kind in an otherwise inhospitable future. The [Coral IVF research team](#) from the Great Barrier Reef Foundation and Southern Cross University collects coral spawn and rears them in captivity while [seeding them with zooxanthellae](#) (symbiotic algae present in all coral that die in too-hot waters) with a higher heat tolerance than normal, giving these larvae a leg up in warmer waters. In 2016, they reintroduced some of these boosted larvae to the reef. And now, in the 2021 breeding season, [22 of these boosted coral colonies are all grown up and breeding in the wild!](#) This is a big step-the research project has come full circle and is now having a real-world impact to fight for the reef's future.



Furthermore, amazingly, this isn't the only coral-saving research project that's hitting key milestones: a [completely separate research team](#), from the Australian Institute of Marine Science (pictured, at work) is taking advantage of the breeding season to collect the sperm and eggs from some of the toughest, most heat-tolerant coral already present on the reef, with a view to [breeding even](#)

[tougher super-coral](#) in their research aquarium. A few dedicated scientists are fighting for the future of the Great Barrier Reef and all corals-and in the face of an increasingly hostile ocean, they're making progress! Great news.



Clean Energy in America: Nebraska and EV Chargers

[Nine US states](#), plus Puerto Rico, Washington DC, and [an array](#) of cities and counties, have passed laws mandating a transition to 100% clean energy in the next few decades, and several more have passed non-binding executive orders pushing in the same direction. However, nearly all of these states-California, New York, Hawaii, Maine-were governed by the Democratic



Party at the time. Now, **Nebraska** (pictured in map) which voted for Trump by a 19-point margin in 2020, is also moving forward! On December 9, the **Nebraska Public Power District** board voted 9 to 2 to adopt a [target of net-zero electricity emissions by 2050](#), joining Nebraska's other two utilities which had already made similar commitments. Although the conservative state government hasn't taken many climate-related actions, [successful campaigns](#) by pro-renewables candidates won seats on the NPPD board in 2016 and 2018, making this vote possible. Nebraska is perfectly situated for wind power, making this a great economic decision for the state. Notably, Nebraska is now the first-ever Republican-controlled state to have committed to 100% renewable energy by 2050-a heartening sign for depoliticization of climate action. Great news!



The Biden Administration has kicked off a program to build out a **national network of 500,000 electric vehicle chargers**, using \$7.5 billion in already-available funds from the just-passed Infrastructure Investment and Jobs Act, hopefully soon to be supplemented by more from the still-in-Congress Build Back Better Act. On December 13th, Vice President Harris

(pictured) [unveiled a plan](#) with some specifics, like the [creation of a new Joint Office of Energy and Transportation](#) and reaching out to states, cities, and manufacturers with guidance and plans for collaboration. [Major utilities have also announced a parallel plan](#) (probably destined to overlap a good deal) to build out

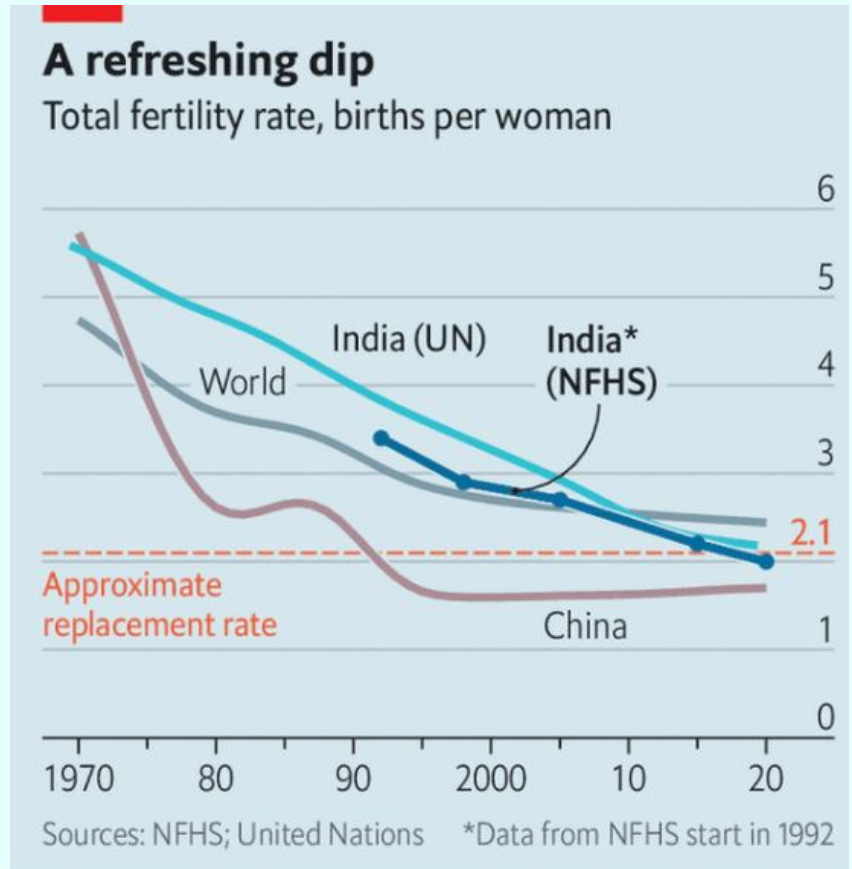


India

On November 24th, a [new national survey found](#) that India's total fertility rate (TFR, the average number of children born to a woman over her lifetime) has [fallen to 2.0](#), from a high of over 6 at independence in the 1940s. Since replacement fertility is 2.1, this means that India will no longer experience rapid population growth, and in fact will likely see a plateauing or declining population in coming decades. ([Chart from The Economist](#): India (UN) shows UN projection, India (NFHS) shows the actual data from a national survey).

This is part of a massive global trend that's one of the most important, most underreported, and potentially most positive changes happening in the world today. Across continents and cultures, increased availability of contraceptives and a welcome shift towards more respect for women's rights is resulting in a "[demographic transition](#)," where people choose to have zero, one, or two kids instead of the much larger families common throughout history, resulting in lower total fertility rates and eventually (as has already happened in much of Europe and East Asia) [declining populations](#). (To address a common query: this isn't happening because people can't afford to have kids, it's happening because people, especially women, are free to choose *not* to have kids for the first time. Fertility rates are declining across cultures and economic levels, [even in countries like Sweden](#) with heavily subsidized daycare and parental leave).

This has big implications for the future of the global population. A [standard UN population projection](#) estimated that we'll reach 10.7 billion humans by 2100, but a [new study with more recent data](#) calculated that a peak at 9.7 billion in 2064 and a decline to 8.8 billion by 2100 is more likely. And all of that is before this new India data-and there's an ongoing trend of the demographic transition happening [faster than expected](#). The possibilities are fascinating. Many of our underlying



The Economist

assumptions about the shape of the world are based on the idea of "cheap humans"-with a constantly growing population, there's always a ready supply of new people to compete for jobs or resources. But in a stable-population world, each individual person will have much more economic leverage. Imagine a future in which aging rich countries compete to *attract* immigrants from sub-Saharan Africa, schools and colleges strive to offer cheap or free educations to promising students, or "job interviews" consist of coveted new workers interviewing an array of companies all wanting to hire them. Not to mention, of course, the fact that the long-feared "population bomb," in which a rapidly growing population leads to famine and war, has been completely defused: [we already grow enough food for 10 billion people](#) (without even considering [upcoming technological advancements](#) like cell-cultured meat or microbial farming) it's just that it's unevenly distributed and much is wasted. With slower population growth coexisting with better and better food production, the tantalizing possibility arises (even when considering the onslaught of increased droughts and storms due to climate change!) that humanity could create a world in which no one goes hungry by the end of the century! The latest news from India may be a step towards that dream.



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