



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

September 1 2021

Kenya, Pakistan, Senegal, and Droughts



Degradation of land (an umbrella term including erosion and loss of soil nutrients, generally meaning "something that makes it harder to grow plants, especially crops") in drylands around the world (another umbrella term, encompassing everything from the Sahara to the savanna) is a major threat to small-scale subsistence agriculture,

especially in sub-Saharan Africa. The [science is unclear](#) on what climate change will do to this trend, but a growing population and expanding farming practices already make eking out a living in these territories unstable at best. Fortunately, several innovative new programs are scaling up solutions that have the potential to make life in the drylands safer, more prosperous, and more sustainable for millions of people.

The **Drylands Development Program (DryDev)**, funded by the governments of Australia and the Netherlands, [has worked with 35,000 farmers in Kenya since 2013 to teach them new planting methods and technologies](#), with a major focus on low-cost, scalable solutions that can be implemented with stuff already available on the ground (as opposed to, say, expensive Western fertilizers or tractors). A major focus is agroforestry, intercropping ground crops with trees that provide shade and moisture to help them survive drought conditions. (Pictured, above, [an agroforestry farm in Kenya](#) assisted by DryDev). This not only helps farmers survive and grow more food, it has great environmental side benefits. "My honey production has increased because more bees are now visiting my trees to collect nectar. Some bird species are also coming to perch on my trees,"

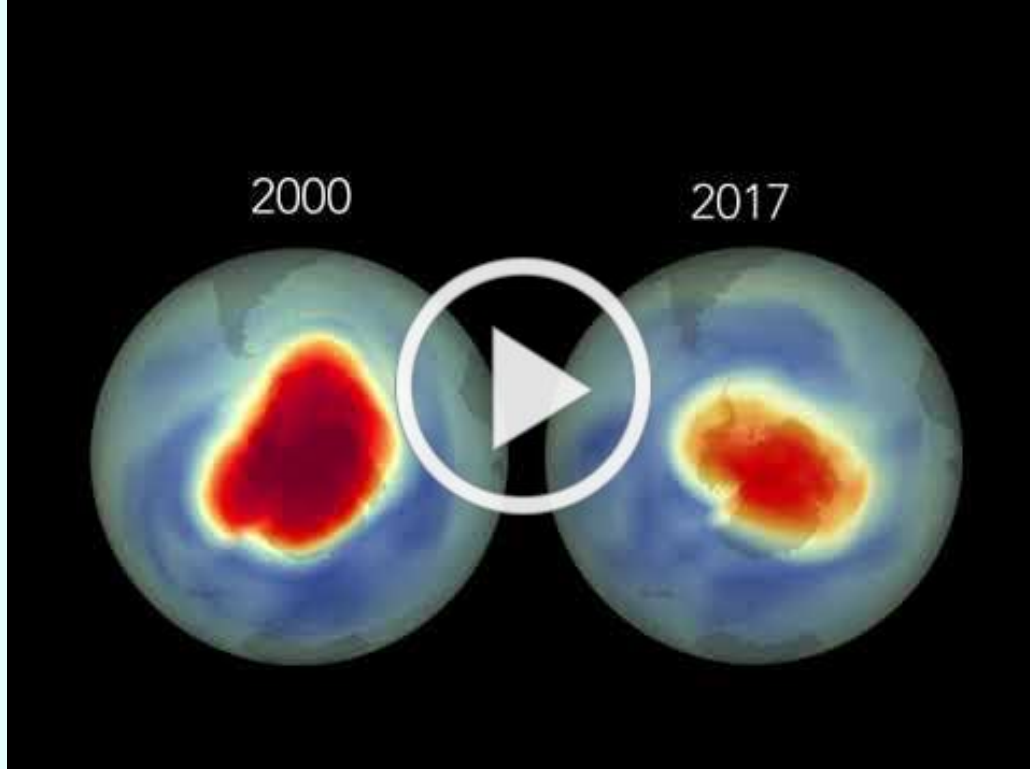
[said Kenyan farmer](#) Benedict Manyi (also pictured above). "I feel like I have given life to a disappearing generation."

And an international alliance of more than 50 NGOs and international aid agencies called the [Start Network](#) has successfully trialed a technique some are calling "[the future of humanitarian assistance](#)" in **Senegal** and **Pakistan**. Their new model is that when drought or other extreme weather is predicted, international donors give money to the potentially affected populations preemptively, staving off a disaster instead of waiting for it to occur. This has [already worked twice](#): when forecasters warned of a severe drought starting in Senegal in November 2019, \$12.5 million was distributed to cover crop failures, resulting in direct cash transfers or other support (like distributing fortified flour) to 335,000 Senegalese people. An assessment found that by "by June 2020, 86% of households said they had received the cash distribution early enough to prepare for the lean season, and 85% said the quality or quantity of their food had improved." During a drought and the COVID-19 pandemic, their lives *improved!* And at the end of 2020, weather forecasters noted that an incipient drought was causing the winter wheat to not grow properly in the Pakistani provinces of Sindh and Punjab, and the Start Network quickly rolled out a nutritional assistance program through local schools. Early results indicate that this has [also been a huge success!](#)

For a long time, everyone from global finance institutions to [special reports by climate scientists](#) to national governments has worried about questions like "What if climate change causes massive droughts in drylands, especially in poor parts of the world like Africa? Will there be famines? War? Massive outflows of fleeing migrants?" The answer may well be "Agroforestry and drought assistance payments will take care of it, or at least reduce it to the level of a survivable rough patch rather than a country-destroying famine-apocalypse." Great news!



The Ozone Hole: A Bullet We Dodged



We knew the 1987 [Montreal Protocol](#) was one of the world's great environmental successes. It was a global agreement that phased out the use of chlorofluorocarbons (or CFCs), chemicals used in refrigerants and aerosols that when emitted into the atmosphere reacted to destroy ozone, (O₃). This was really dangerous, because [the ozone layer](#) in the stratosphere absorbed the vast majority of mid-spectrum ultraviolet radiation that would otherwise damage life-forms on Earth's surface. Widespread use of CFCs caused a rapidly growing "ozone hole" over Antarctica in the 1980s, and raised worries of UV radiation causing more cancer around the globe. Since the Montreal Protocol, though, [NASA has confirmed that the ozone hole is shrinking](#), and it should be back to normal in the second half of the 21st century-possibly as early as 2060.

Now, [a new study in Nature](#) has used counterfactual global climate modeling to [calculate what the world would have looked like](#) if there had been no Montreal Protocol, and it makes clear just how important a bullet we dodged. In the worst case scenario, the ozone layer would have collapsed by 2040, causing millions more human deaths from skin cancer.

Furthermore, UV radiation damages plant life too. And plants sequester carbon. When modeling these potential ultra-high UV levels and comparing them to our existing knowledge of the world's plant life, [the researchers found that](#) in a worse-case scenario in which the ozone hole kept getting worse, the extra UV damage to the plants of Earth would have likely caused [an extra 325 to 690 billion metric tonnes of carbon](#) to be released into the atmosphere by 2100, or about enough enough to cause another 0.5 to 1 degrees Celsius of warming. For context, [in 2019 humanity's fossil fuels and industry emitted](#) 36.81 billion metric tonnes, and all global warming to date has been in the range of 1.1 degrees Celsius, with avoiding 1.5 or 2 degrees Celsius major global goals. If we hadn't fixed the ozone hole, we'd be in a much nastier world, one with a skin cancer crisis *and* considerably worse climate change. The success of the Montreal Protocol is worth celebrating-and is a useful reminder that contrary to Internet

doomism, we are certainly not in the "darkest timeline."



Leaded Gasoline, Algeria, and the World

In 1922, a General Motors engineer named [Thomas Midgley](#) came up with the idea of adding lead to gasoline, which fixed a relatively minor problem that had been plaguing early internal combustion engines. It entered widespread production despite [lead being a known poison even at the time, and Midgley coming down with lead poisoning himself in 1923](#). By the 1970s, it was standard issue for all cars around the world...and it was causing horrendous problems and ruining the lives of thousands upon thousands of people. Lead is a dangerous neurotoxin, and combusting leaded gasoline released it into the atmosphere, causing [massive brain damage, especially in children](#). Lead poisoning often leads to [extremely violent behavior](#). This in turn was [probably a major contribution](#) to the [US crime wave of the 1960s through 1980s](#). Then in 1973 the EPA started instituting regulations to phase out leaded gasoline in the US. Soon, the World Health Organization, UN Environment Program, and others started fighting to get rid of it around the world.

Now, in July 2021, the North African nation of Algeria used up the world's last stockpile of leaded gasoline. It's [not being burned anywhere on the planet](#). There isn't any more being made. This is...*really amazingly good*. It's an even further along case of the ozone hole study: we just declared absolute victory on a hideous environmental problem. The UN estimates that not using leaded gasoline (compared to a world where everyone uses leaded gasoline, not compared to the situation right before the last holdouts in Algeria stopped) "**will prevent more than 1.2 million premature deaths and save USD 2.45 trillion a year.**" [in avoided healthcare costs and reduced crime rates].

This is truly great news: we've ended one of our worst mistakes. Go, humanity!

Coda

One major theme of this newsletter is that we *can* solve big scary global environmental problems that if left unchecked would severely screw up human civilization and/or life on this planet. We know this before we've *done* it, *twice*, in the last fifty years. Admittedly fossil fuels are far more broadly used and integrated with the global economy than CFCs or leaded gasoline ever were, but we've already developed clean, safe, alternatives (renewable energy) and we're deploying them [incredibly fast, much faster than anyone predicted](#). Climate impacts are here and will continue to get worse, but people all over the world are coming up with smart new ways to help people and ecosystems survive, from the drought impact payments discussed above to [a method of strategically thinning "defensive perimeter" swathes of forests that has started to be used to successfully protect areas from wildfires](#).

The climate crisis is dangerous. The climate crisis is causing harm and suffering to humans and animals right now, and has the potential to cause much more in the future. The climate crisis is arguably the most important thing we have to deal with this century, right up there with "ending extreme poverty" ([also](#)

[potentially within reach in our lifetimes!](#)) and "keeping this whole democracy thing going." But it's really important to remember that the climate crisis is *not the end of the world*. We can avoid the worst-case scenarios, blunt the impact of the unavoidable, and make a better world along the way. An essay that rather eloquently makes this point (and a more general one about not giving in to despair or falling for a "collapse" narrative) is shared below.



Collapse, Renewal and the Rope of History

This story first appeared in the Future Crunch newsletter, a regular roundup of good news, mind-blowing science and the best bits of the internet. You can subscribe for free over here . It's been more than a month since you last heard from us.

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