The Fight Against Global Warming: A Failure and A Fix

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> Global climate change and land degradation have to be put on a war footing internationally - meaning that all nations need to pull together and treat this threat as we would a war. . . . Only through uniting and diverting all the resources required to deal with climate change and land degradation can we avert unimaginable tragedy. We have all the money we need. ***All we cannot buy is time.***
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> Allan Savory[1]

A Failure

I've been a climate activist since the millennium turned, twelve long years ago. It's been an eternity of global-warming days since then. I've rallied, marched, petitioned, organized, lectured, blogged, fumed, despaired, studied, argued and hoped. I've met leading lights - scientists, writers, and activists - and took their inspiration into the world, signing onto the party line and fully committing to our collective, world-saving goal: reducing greenhouse gas emissions. And now I wonder if all of our work has made any difference at all.

Despite our passion and desperation, Copenhagens and "Inconvenient Truths," despite circuses ("conferences" or "summits" in more polite circles) in Rio, Bali, Copenhagen and elsewhere, despite the increasingly desperate warnings from thousands of scientists studying climate every which way from Sunday, we've stood by helplessly as the rate of greenhouse gas emissions has steadily *increased*, as the climate has grown hotter and wilder by the year. [2]

It seems that so far we've been unable to come to terms with a painful reality:

> *Our fight against global warming has not worked*.

What I mean by "work" is quite simple: the atmospheric concentration of greenhouse gases falls steadily and surely towards pre-industrial levels of around 280 parts per

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[1] Allan Savory, "A Global Strategy for Addressing Global Climate Change," 2008, http://www.savoryinstitute.com/wp-content/uploads/2012/01/GlobalStrategyforAddressingClimateChange2_1.pdf, pp. 19-20.

[2] International Energy Agency, "Global carbon-dioxide emissions increase by 1.0 Gt in 2011 to record high," May 24, 2012, http://www.iea.org/newsroomandevents/news/2012/may/name,27216,en.html

million (ppm), and doesn't stop until we get there. If we settle for anything less we are just kidding ourselves straight into a hellfire, chaotic and deadly world.

And that's exactly where we've been heading ever since leading NASA climate scientist Jim Hansen stood up before Congress in 1988 and announced that we're in deep climate trouble. Since then, in the largest coordinated scientific investigation ever, we've confirmed our worst fears by studying everything from ice cores to sea-surface temperatures to sediment samples and ancient layers of rock, to jet streams, gulf streams, to floral and faunal migrations, to ocean chemistry and a universe of other specialties.

Climate activists and writers have worked 24 x 7 as well, aiming at raising public awareness, applying political thumbscrews, creating movements, locally, nationally, anywhere and everywhere. We've threatened, cajoled, manipulated (a.k.a. "social marketing"), called up all the shows of dogs and ponies, rallied, taught-in, partied, networked, and spelled out "350" in a thousand picturesque ways.

So far, not so good.

National governments have clearly failed to do their job in addressing climate, and climate chaos is taking over today, not in some distant future. Can we admit that we've not only lost the battle against the Inconvenient Truth, but that the war itself is hanging in the balance? When do we finally figure out that perhaps we are on the wrong path? Here's the problem:

*We're **obsessed** with greenhouse gas emissions.*

Yes, those greedy oil, gas and coal companies should be stopped. And let's take the cotton-mouthed corporate media to task while we're at it . . . . Unfortunately, right now we are hooked on hydrocarbons and there is no way we're going to kick the habit *in time* without incalculable suffering for millions if not billions of people: no food, no water, no power, no heat, no transportation.

Human greenhouse gas emissions are much more than the gases from our tailpipes and power plants. They're also the gases from the melting permafrost and seabed floor, from the failing carbon sinks of dying forests, warming oceans and wilderness sacrificed to agriculture. In fact, the soils destroyed worldwide by humans since the advent of agriculture have added more than twice the greenhouse gases to the atmosphere than all emissions from fossil fuels.[3]

[3] P. Buringh, "Organic Carbon in Soils of the World," in *The Role of Terrestrial Vegetation in the Global Carbon Cycle: Measurement by Remote Sensing*, G. M. Woodwell, Ed., John Wiley & Sons Ltd, 1984, p. 91, http://globalecology.stanford.edu/SCOPE/SCOPE_23/SCOPE_23_3.1_chapter3_91-109.pdf. Since 1750 we have added roughly 224 gigatons (Gt) (112 ppm) of carbon to the atmosphere; total loss of soil carbon to the atmosphere since the advent of agriculture is roughly 537 Gt.

And there's more to come, in the form of self-sustaining positive feedback loops that will surge ahead with no further help from us. For example, melting permafrost contains twice as much carbon as the atmosphere, and as it emits carbon over the years it will warm the atmosphere further and continue to accelerate its own melting and emissions.

Here we are: the elephant has arrived in the room, special delivery. The elephant is *bigger* than the room. Of course we should stop the carbon machine, marshal everything in our power to do so, but we'd better recognize that we're not doing it, and we've got to do something else as well. Something very big. Because the fact is that we can't stop, or even reduce, this global civilization's greenhouse gas emissions *in time*.

That's not, "*Maybe* we won't stop this global civilization's greenhouse gas emissions *in time*." It's not "We *probably* won't stop this global civilization's greenhouse gas emissions *in time*." It's "We *can't* stop this global civilization's greenhouse gas emissions *in time*." We have proved this to ourselves beyond a shadow of a doubt, even if we refuse to admit it: CANNOT. If we had the luxury of a leisurely pace, sure, we would eventually reduce emissions, but time is precisely what we don't have.

A Fix

Our first priority is to get greenhouse gases out of the atmosphere and into the ground as rapidly as possible.

And now here's the good - and surprising - news: All we need is dirt. And cows.

Grazing animals are the path to restoration of the world's grasslands, which has the potential to pull all of the legacy carbon out of the atmosphere and put it back into the ground where it belongs. And keep it there for thousands of years. It's a most convenient truth.

We have evidence to indicate that, in three decades or less, it is possible to return greenhouse gases to the climate-stable pre-industrial levels of 280 ppm. It requires no unknown or complicated technology - in fact, no technology at all. It is based on nature's brilliant soil-based carbon capture and storage, also called Holistic Management of grasslands. It has so many benefits - including an eventual net cost of zero or less - that even if climate weren't an issue we should be doing it anyway.

In general, to the extent we've already considered carbon capture and storage, the focus has been on expensive high-tech engineering schemes which, like all high-tech schemes are fraught with potentially catastrophic unintended consequences. Global warming itself is an unintended consequence of technology, the Mother of Unintended Consequences, and like all of them was impossible to anticipate.

Thanks to an innovative Zimbabwean biologist and rangeland manager named Allan Savory, for decades we've been learning how to restore desertified grasslands by re-

establishing the evolutionary relationship between grazing animals and their habitats. So far this has been accomplished on 40 million acres across Africa, South America, Australia and the U.S.[4]

What we need for returning to pre-industrial atmospheric carbon levels is within ready reach: billions of acres of plains and savannas - mostly damaged by improper human use - and billions of grazing animals, managed the way nature has successfully done it for millions of years.[5] This is the polar opposite of conventional livestock management, where animals are left to overgraze and turn the land to mud and dust.[6] Confusion over the categorical differences between the two approaches has resulted in misleading assessments that lead us in precisely the wrong direction.

Unknown to most climate folks, there are mainstream scientific studies that show the enormous carbon storage capacity of soils (where there is currently more than twice the carbon than in the atmosphere).[7] Capturing one ton of carbon per acre per year is a reasonable expectation on conventionally well-cared for grasslands,[8] even without the benefit of animals that break capped soil surfaces with their hooves, fertilize, moisturize and aerate the ground, and make earth hospitable to thousands of vital soil organisms. Add proper management of cattle, goats, sheep and other grazers, the soil-based carbon capture and storage potential increases dramatically (while under conventional rangeland management soils lose carbon every year).

Another confusion for climate activists is that they want CO_2 numbers, whereas rangeland activists are satisfied when they *see* the carbon in the soil: healthy dirt is black (the color of carbon), soft, moist, brimming with microbial, fungal, green plant, insect and animal life, resilient to droughts and floods. But because such evidence, powerful though it is, is unfamiliar to the climate crew, we have trouble grasping how effective soil carbon sequestration can be. As a result, there is untoward resistance to soil-based carbon capture and storage among global warming warriors. It is difficult for us to believe that a traditional climate enemy, cows, are our friends.

Yet there is no climate-saving strategy that has anywhere near the potential of soils. There are roughly 12 billion acres worldwide, mostly ruined by human misuse, which we can restore. At a modest one ton per acre we can pull twelve billion tons of carbon out of

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[4] "We Need a Brown Revolution: Interview with Allan Savory," United Nations Convention to Combat Desertification (UNCCD) News, May-June 2011, http://newsbox.unccd.int/3.3/imgissue/UNCCDNews3,3.pdf

[5] http://www.savoryinstitute.com/what-we-do/empowering-others/

[6] "Livestock's Long Shadow: environmental issues and options," United Nations Food and Agricultural Organization, Rome, 2006, http://www.fao.org/docrep/010/a0701e/a0701e00.htm

[7] P. Buringh, *op. cit.*

[8] M. A. Liebig, et al., "Soil Carbon Storage by Switchgrass Grown for Bioenergy," Bioenerg. Res. (2008) 1:215–222, September 2008, http://naldc.nal.usda.gov/download/28132/PDF.

the atmosphere every year. That's 6 parts per million (ppm) - and even if we foolishly continue to add 2 ppm annually, it's still less than a 30-year trip back to a stable pre-industrial 280 ppm, down from today's perilous 393.

Early on we may have been right to pursue the obvious - reducing emissions - and for a while it even seemed that it might work. But it hasn't, and after all these years of habit we resist aiming our activism elsewhere. Here's an example, starring a climate hero.

During winter 2010, a restoration ecologist, a rangelands activist and I drove from Boston up to Middlebury College in snowy Vermont to visit Bill McKibben, urging him to investigate grassland restoration. He was convinced enough to research and write an article about it - and a good one at that:

> Done right, some studies suggest, this method of raising cattle could put much of the atmosphere's oversupply of greenhouse gases back in the soil inside half a century. That means shifting from feedlot farming to rotational grazing is one of the few changes we could make that's on the same scale as the problem of global warming. ("The Only Way to Have a Cow," *Orion* magazine, March/April 2010, http://www.orionmagazine.org/index.php/articles/article/5339/)

He even spoke at a conference held by the Quivira Coalition, an organization dedicated to eco-restoration in the American west. But since then, even though he appears to be in agreement . . . silence.

Why only one mention of soil-based carbon capture and storage, a minimal aside, on 350.org?[9] McKibben has been waging a noble battle against fossil fuels and writing about the associated politics and economics for decades, yet our predicament is more dire than ever. At this point perhaps it is time for him and the rest of us to stop, catch our breaths (and lick our wounds), regroup and rethink.

On the plus side, in 2010 the Africa Centre for Holistic Management in Zimbabwe won the $100,000 Buckminster Fuller Award for its "proposal that has significant potential to solve humanity's most pressing problems."[10] At the time of this writing, January 2013, the Savory Institute is one of eleven finalists out of 2,600 applicants in business magnate Richard Branson's $25 million Virgin Earth Challenge.[11] The Challenge's goal is to advance "the successful commercialisation of ways of taking greenhouse gases out of the atmosphere and keeping them out with no countervailing impacts." Branson's concept is flawed: what if saving the climate is *not* commercially viable? Does that mean we

[9] http://world.350.org/africa/2011/09/24/moving-planet-is-underway-and-zimbabwe-kicks-off-africa/, accessed on November 25, 2012.

[10] http://achmonline.squarespace.com/awards-and-recognitions/, http://challenge.bfi.org/Winners

[11] Helen Craig, "Virgin Earth Challenge announces leading organisations," Nov 2, 2011, http://www.virgin.com/people-and-planet/blog/virgin-earth-challenge-announces-leading-organisations.

shouldn't do it? How commercially viable is a dead civilization? But $25 million would help eco-restoration along, and despite a faulty premise it is still possible to do the right thing.

More on the plus side: along with massive carbon sequestration, global-scale restoration of grasslands re-establishes a balanced hydrological cycle, soil integrity and biodiversity; helps stabilize local and, eventually, global weather patterns; provides positive stable work opportunities, particularly in third-world countries; produces high-quality animal protein without synthetic soil supplements and destructive factory farming; and supports local communities worldwide in sustainable living.

The icing on the eco-cake? We would need far less along the lines of slow and barely more than symbolic international agreements, endless contorted and protracted government approvals, complex machinery, dangerous geo-engineering experiments, or prohibitive sums of taxpayer money thrown at desperate and wacky technologies. What we would need are the already abundant lands that have been abused unto uselessness, some eager and dedicated ranchers and herders, and some ruminating animals. These are readily available and, as far as rescuing life on earth for future millennia goes, pretty cheap - far less than the cost of recovering from just one super-hurricane like Sandy.

The New Focus

Put carbon back into the ground. Now.

Suppose that just some of the efforts currently dedicated to emissions reduction were shifted to eco-restoration and biologically-based carbon sequestration in soils. Instead of endlessly pleading with government and industry, suffocating in bureaucracy and political quagmires, arguing about profits and tax breaks, we just hit the ground - grazing. Imagine if 350.org dedicated some of its global efforts to turn communities to carbon farming. Or if officials and commercial operations started setting aside currently useless rangelands for restoration of grasses, water cycles, and soils, and producing jobs and high-quality protein. And while worldwide international agreement would be a wonderful thing, we can proceed without it - even a relatively small group of people could do the job, and it would be hard to mount objections to restoring ruined land that is currently bereft of healthy biodiversity, barely useful for anything else.

You don't even have to believe that global warming exists, only that healthy soils are beneficial. Who knows, maybe it's even possible to unite climate skeptics with firebrands, profiteers with non-profiteers, corporations with real, live people. I would venture that not many folks prefer parched, cracked, lifeless earth to fields of waving grasses, full of creatures great and small.

We can get together on this one.

It would make sense for governments to step forward, since public coffers already supply a lion's share of the cash to *undo* what carbon economies have wrought: Hurricane Katrina cost the U.S. taxpayers around $110 billion, Hurricane Sandy likely upwards of $50 billion. And that's just the tip of the iceberg (if we can find one).

There's plenty of money out there to redirect towards saving life on earth. What about the $1 trillion in annual worldwide subsidies to the fossil fuel industries? [12] Or the $396 billion price tag on America's F-35 jet (with a projected long-term cost of $1,100,000,000,000), a single over-budget weapons system, designed to fight threats not a fraction as threatening as our current path to a climate-ravaged planet. [13]

While we should at least make an effort to aim national treasuries at survival strategies, here's another proposal as well: big bucks from the coal, oil and gas industry.

Is it a good idea? Would supporting soil sequestration just wind up as an excuse to keep pumping out carbon, or creating bogus "carbon credits"? Maybe. But, since no excuses have been needed yet, why would fossil mongers need one now? In any case, given the current accelerating climate death spiral, desperate measures are in order. Besides, that obsolete breed of capitalists may have reasons of their own to agree, not the least of which is that there aren't very many customers on a starving planet, burned to a crisp.

Of course we should do everything we can to keep carbonaceous fuels deep in the ground. Given our dismal track record, however, and the pressing state of emergency, let's move ahead on eco-restoration with all due dispatch, and let the corporate purveyors of pollution help pay for it.

Pull out all the stops and put carbon back into the ground - the way nature does it.

Will soil sequestration of carbon do everything to save us? In and of itself, unfortunately not. We need to restore forest and other ecosystems as well, expand our understanding of how nature cycles carbon, and apply it. Furthermore, we're still confronted by a growing and hungry population, depleted resources, species extinctions, inequity and many other afflictions of civilization. But if we don't solve global warming all of our other problems will be moot.

Savory was absolutely correct: the only thing we cannot buy is time. Never was there a more urgent need to prepare for war. Never was there to be a war which would build, not destroy, and which would save so many lives. And to that point restoration of grasslands is so far ahead of anything else on the table, in a wealth of ways, that a failure to embrace it - with all due dispatch, with all necessary resources - would be tragic.

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[12] The World Bank, "The Real Cost of Fossil Fuel Subsidies," May 9, 2012, http://go.worldbank.org/EBQRS9K7H0.

[13] Christopher Drew, "Costliest Jet, Years in Making, Sees the Enemy: Budget Cuts," New York Times, November 29, 2012, http://www.nytimes.com/2012/11/29/us/in-federal-budget-cutting-f-35-fighter-jet-is-at-risk.html.