

CLIMATE CHANGE: THE END OR THE BEGINNING? YOU CHOOSE!

Christian R. Komor, Psy.D. dr.komor@gmail.com



EXECUTIVE SUMMARY

- (1) Government and industry have been aware since the 1970's that anthropogenic greenhouse gasses are accumulating in the atmosphere and forcing global warming induced environmental disruption and, 1, 2, 3, 4
- (2) In the intervening years "legacy" CO₂ concentrations have reached 750 gigatons (GtC) or 420 parts per million (ppm). Reduction of future emissions, while important for sustainability, will not solve the *existing* problem of global warming due to these legacy emissions. 5, 6
- (3) Legacy emissions will take from hundreds to thousands of years to process naturally and, 7, 8
- (4) Numerous feedback loops in planetary ecology (e.g., melting permafrost releasing methane causing further melting releasing more methane) are combining with legacy and ongoing emissions resulting in exponentially disruptive climate effects. Overlooking this synergy has led to errors in expectations of the scope and speed of climate disruption and, 9, 10
- (5) Paleo-geologic records indicate that breaching a *450ppm atmospheric carbon* and, or *10GtC oceanic carbon* threshold (both approaching in the mid-2030's) has, in previous epochs, caused a shift to a "new normal" inconsistent with whatever current planetary life exists and, 11, 12, 13
- (6) Social and political attention is being sidelined in arguments around goals for reducing further emissions – reductions which will do nothing to eliminate the existing terminal legacy emissions stockpile and, **Therefore:**
- (7) The only workable solution to global warming, at this late date, is to rapidly deploy Negative Emissions Technology (NET) specifically *Direct Air/Atmospheric Carbon Removal (DACR)* on a very large scale. DACR is new, jobs-producing, industry sector in which atmospheric carbon is removed from the directly from the air and made into useful products or safely buried. (DACR is not the "carbon capture" in which CO₂ is filtered at the source to reduce further emissions.) Fortunately, 14
- (8) DACR is already up and running in 18 small demonstration facilities in Canada, Europe and the United States.
- (9) The U.S. has developed the *Carbon Negative Shot* program under the U.S. Department of Energy to encourage free-market DACR exploration however, 15
- (10) Seeding of the private sector on a "business and profits as usual" timescale will be greatly outpaced by the cascading feedback loops now occurring. Climate change is truly a larger and more serious problem than World War II and will require an effort at least as well funded and organized. (Imagine in 1940 if Allied governments had given money to various companies and told them, "See if you can find a way to solve this NAZI problem.")
- (11) Already *\$5 trillion dollars* have been spent in the chaos of patchwork, climate cleanup efforts, half what is needed to fully fund *Carbon Negative Shot*. Looking forward, Deloitte Economics Institute estimates climate change will cost the global economy \$178 trillion in the next 50 years. Very soon we will reach a point where we do not have the resources left to mount a Direct Air/Atmospheric Carbon Removal program of sufficient size. 16
- (12) **The *Carbon Negative Shot* as it stands now will fail.** It must be immediately re-modeled (perhaps also employing other mechanisms such as the Defense Production Act) and *vigorously funded as a government initiative* using the best currently existing technology. Research, of course, will continue to improve methodology and reduce cost, but *Carbon Negative Shot* must begin *now* to remove the needed gigatons of carbon from the atmosphere in the next 10 years and bring us back down below a safe threshold of 350 ppm.
- (13) **For those concerned about the potential results of the 2024 U.S. election**, researchers have found that establishing a unifying world view under a collective goal (like large-scale DACR) can pull us out of the chaotic and divisive phase we appear to be in socially. This may be the only way to transcend the current powerful amalgam of existential fear, authoritarianism, isolation, collective narcissism, and social dominance seeking that are behind the current extremist right-wing phenomena. Without DACR as a unifying force unhealthy psychosocial dynamics may propel the next election cycle.
- (14) **What You Can Do Now: Resist the premature temptation of emissions reduction, mitigation and "drawdown" strategies. Instead, visit www.climatedeadline.com and find out how to lobby key Senators and Congresspersons to fully fund the *Carbon Negative Shot* program so we can restore our children's future before the mid-2030s when it will be too late.**

BACKGROUND OF DR. CHRISTIAN R. KOMOR'S WORK IN RESOLVING THE CLIMATE EMERGENCY

Dr. Christian R. Komor is a career psychologist and environmentalist whose first Op-Ed on concrete and atmospheric carbon pollution was published in the Kalamazoo Gazette while he was in High School in the 1970s. Dr. Komor began a 30-year career in healthcare psychology after graduating Magna Cum Laude from Wright State University in 1989. Chris published his first book "The Power of Being" in 1992 providing a forewarning of, and solutions to prevent, the crisis of escalating excess which now threatens our global way of life in the form of Climate Change. In the intervening years Chris has authored numerous books, translated into multiple languages, including "Driving Ourselves Sane" (2012), "Beneath It All" (2012) and "Climate Deadline 2035" (2017). Over the years Dr. Komor has been the focus of dozens of articles, and television and radio interviews and has been a guest lecturer on neuropsychology in more than 100 U.S. cities.

Originally a native of Michigan, Chris migrated to the American Southwest in the early 2000's falling in love with the diversity of the land and animals and further increasing his dedication to preserving and protecting our environmental future. After witnessing hundreds of industrial fracking sites going up along the banks of the Colorado River in 2015, Chris trained with Al Gores's *Climate Reality* team and eventually worked with and a group of microbiologists and physicists developing Negative Emissions Technologies (NET). In late 2017 he published the first edition of "Climate Deadline 2035" and began a run for 2018 Arizona Governor on a platform of climate awareness. In 2019 Chris founded the Climate Deadline Alliance (CDA) whose mandate is to provide education and information supporting the large-scale deployment of Direct Air/Atmospheric Carbon Removal (DACR).

In early 2021 Dr. Komor was special consultant to the White House transition team, urging inclusion of (DACR) in the Administrations environmental programing. By then *Climeworks* in Austria and several other companies around the world had demonstrated the efficacy of Direct Air/Atmospheric Carbon Removal (DACR). The White House remained unconvinced, so Dr. Komor filed *Komor vs. United States* (4-22-CV-0007) to tip the scales. Finally, in late 2022 during Appeal in the Ninth Circuit, the United States responded with the *Carbon Negative Shot* (CNS) initiative. CNS clawed its way out of the Bipartisan Infrastructure Law and found its way to the Department of Energy (DOE). (<https://www.energy.gov/fecm/carbon-negative-shot>). Unfortunately, by then the focus was on seeding private industry to establish DACR which will be too little too late. Dr. Komor is presently continuing his pro bono work to see that Direct Atmospheric Carbon Removal is fully funded by Congress.

Dr. Komor can be reached at climaterespair@protonmail.com or 800-884-0824

CITATIONS

1. Houghton, J. T., Jenkins, G. J., & Ephraums, J. J. (1990). *Climate change: The IPCC scientific assessment*. Cambridge University Press.
2. National Research Council. (2010). *Climate change: Evidence, impacts, and choices*. National Academies Press.
3. Intergovernmental Panel on Climate Change. (2021). Summary for policymakers. In *Climate change 2021: The physical science basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.
4. Nazarenko, L., G.A. Schmidt, R.L. Miller, N. Tausnev, M. Kelley, R. Ruedy, G.L. Russell, I. Aleinov, M. Bauer, S. Bauer, R. Bleck, V. Canuto, Y. Cheng, T.L. Clune, A.D. Del Genio, G. Faluvegi, J.E. Hansen, R.J. Healy, N.Y. Kiang, D. Koch, A.A. Lacis, A.N. LeGrande, J. Lerner, K.K. Lo, S. Menon, V. Oinas, J.P. Perlwitz, M.J. Puma, D. Rind, A. Romanou, M. Sato, D.T. Shindell, S. Sun, K. Tsigaridis, N. Unger, A. Voulgarakis, M.-S. Yao, and J. Zhang, 2015: Future climate change under RCP emission scenarios with GISS ModelE2. *J. Adv. Model. Earth Syst.*, 7, no. 1, 244-267, doi:10.1002/2014MS000403.
5. Rogelj, J., Shindell, D., Jiang, K., Fifita, S., Forster, P., et al. (2018). Global warming of 1.5°C and 2°C: Implications for land, energy, water, human health, and ecosystems. In *Global warming of 1.5°C. An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*.
6. The Guardian. (2019, October 8). Climate change: We have 12 years to avert catastrophic global warming, warns UN.
7. Meinshausen, M., Smith, S. J., Calvin, K., Daniel, J. S., Kainuma, M., et al. (2011). The RCP greenhouse gas concentration scenarios: A presentation of the concept. *Climatic Change*, 109(1–2), 5–31.
8. Friedlingstein, P., Jones, M. C., O'Neill, B. C., et al. (2019). Global carbon budget 2019. *Earth System Science Data*, 11, 1783–1838.
9. Lenton, T. M., Held, H., Kriegler, E., Hall, J. W., Lucht, W., et al. (2019). Climate tipping points—Too risky to bet against. *Nature*, 575(7782), 592–595.
10. Steffen, W., Rockström, J., Richardson, K., Lenton, T. M., Schellnhuber, H. J., et al. (2018). Trajectories of the Earth System in the Anthropocene. *Proceedings of the National Academy of Sciences*, 115(33), 8252–8259.
11. Beerling, D. J., & Royer, D. L. (2011). The Phanerozoic carbon cycle: A very brief history. *Earth-Science Reviews*, 106(3–4), 117–134.
12. Zeebe, R. E., Zachos, J. C., Dickens, G. R., & Schellnhuber, H. J. (2015). Ocean acidification and the future of marine ecosystems. *Science*, 347(6223), 1255–1259.
13. Hansen, J., M. Sato, P. Hearty, R. Ruedy, M. Kelley, V. Masson-Delmotte, G. Russell, G. Tselioudis, J. Cao, E. Rignot, I. Velicogna, E. Kandiano, K. von Schuckmann, P. Kharecha, A.N. Legrande, M. Bauer, and K.-W. Lo, 2015: Ice Melt, Sea Level Rise and Superstorms: Evidence from Paleoclimate Data, Climate Modeling, and Modern Observations that 2 C Global Warming is Highly Dangerous. Published in *Atmos. Chem. & Phys. Discussions* (July 23).
14. International Energy Agency. (2023, May). Net zero emissions by 2050.
15. U.S. Department of Energy. (2022, March 8). Carbon Negative Shot.
16. Hansen, J., M. Sato, P. Kharecha, K. von Schuckmann, D.J. Beerling, J. Cao, S. Marcott, V. Masson-Delmotte, M.J. Prather, E.J. Rohling, J. Shakun, P. Smith, A. Lacis, G. Russell, and R. Ruedy, 2017: Young people's burden: requirement of negative CO₂ emissions. *Earth Syst. Dynam.*, 8, 577-616, doi:10.5194/esd-8-577-2017.