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A Citizen's Guide to Climate Change

By Marlo Lewis, Jr.*

Climate change is not a hoax, but as a political matter, it is a persistent pretext for expanding government control over the economy, redistributing wealth, and empowering unaccountable elites at the expense of voters and their elected representatives. This pretext rests on three falsehoods:

1. Science has determined that climate change is a “planetary emergency”—a rapidly unfolding global catastrophe.
2. A panoply of market-rigging interventionist policies, called “climate solutions” by their proponents, can deliver meaningful climate protection at reasonable cost.
3. Only deluded science deniers or greedy polluters oppose such policies.

In fact, climate change does not endanger the survival of civilization or the habitability of the planet. So-called climate solutions are bureaucratic power grabs and corporate welfare schemes with no detectable climate-related benefits. Opposition to such policies is prudent regardless of one's views on climate science.

Misled by the planetary emergency narrative, some conservatives assume they cannot oppose carbon taxes, cap-and-trade, or the Paris climate treaty unless they deny or doubt industrial civilization's enhancement of the greenhouse effect, which puts them crosswise with nearly all scientists. It makes them timid in debate and vulnerable to attack as “anti-science.”

Policy makers and the public should consider a realistic alternative to both catastrophism and denialism. Sometimes called “lukewarming,” this perspective uses the scientific method—testing hypotheses against data—to assess climate change risks.¹ Lukewarmers also use economics to assess the costs and risks of climate “solutions.” Here are the main takeaways:

- The catastrophe narrative is concocted out of unreliable climate models, inflated emission scenarios, political hype, and unjustified pessimism about human adaptive capabilities.
- The very real costs of climate “solutions” hugely exceed their hypothetical benefits.
- Citizens have more to fear from the climate agenda than from climate change itself.

This memo summarizes numerous key facts supporting those findings.

Humans' Role in Climate Change. There have been two global warming periods during the past century. The first ran from 1910 to 1945 (~0.7°C), the second, from 1976 to the present (~0.8°C). A mild cooling occurred during the 1950s and 1960s.² Mankind's contribution to the

* Marlo Lewis, Jr. is a senior fellow at the Competitive Enterprise Institute.

first warming period was small, as atmospheric carbon dioxide (CO₂) concentration barely increased, rising from 300 parts per million in 1910 to 310 ppm in 1945.³

According to the United Nations Intergovernmental Panel on Climate Change (IPCC), it is “extremely likely” that more than half the warming since 1951 is anthropogenic—that is, human-caused.⁴ However, not all scientists agree, in part because the IPCC has not persuasively explained either the early 20th century warming or mid-century cooling.⁵

In any event, the warming rate of the past 40 years as measured both by satellites and weather balloons has been gradual and remarkably constant (~0.15°C/decade), not rapid and accelerating, as often claimed.⁶

Climate campaigners often depict global warming as bad for good things (e.g., children) and good for bad things (e.g. mosquitoes). However, both CO₂ emissions and global warming have significant direct ecological and health benefits. Rising CO₂ concentration, climate change, and nitrogen deposition—another byproduct of fossil fuel combustion—have expanded global green foliage cover by an area twice the size of the continental U.S. since 1982.⁷ Atmospheric CO₂ fertilization has cumulatively added trillions of dollars to global agricultural output since 1961.⁸ Warming has increased the U.S. frost-free growing season by two weeks since 1970.⁹ The average number of cold days and nights has decreased globally since 1950,¹⁰ which is good news considering that cold kills 20 times as many people as heat.¹¹

Improving State of the World. If climate change were a global ecological crisis, we would expect to find evidence of declining health and well-being over the past 70 years. Instead, we find dramatic improvement in life expectancy, per capita income, food security, and various health-related metrics.

Global life expectancy increased by 48 percent, from 48 years in 1950 to 71.4 years in 2015, including a 68 percent increase in Africa, the poorest continent.¹²

Just since 2000, a period encompassing nine of the warmest years since 1880, according to NASA surface temperature estimates,¹³ per capita GDP increased by 54 percent in Latin America, 62 percent in Africa, and much higher percentages in Asia.¹⁴

U.S. and global yields of corn, wheat, rice, and soybeans have increased every decade since 1960.¹⁵ For example, U.S. corn yields have increased 25 percent since 2000, 44 percent since 1990, and 88 percent since 1980.¹⁶ Thanks to increasing yields and rising per capita income, the prevalence of undernourishment in developing countries has decreased from 34.7 percent of population in 1970 to 12.9 percent in 2015.¹⁷

Globally, 2.6 billion people have gained access to improved water sources since 1990—more than one third of the world’s population.¹⁸ The global child mortality rate fell from 18.2 percent in 1960 to 3.9 percent in 2018.¹⁹ During 2000-2015, global malaria infections and death rates fell by 37 percent and 60 percent, respectively.²⁰ The global burden of disease, measured in disability adjusted life years, has declined across all age categories since 1990.²¹

Massive development challenges remain. An estimated 650 million people live in extreme poverty,²² more than 820 million are undernourished, and 1.5 million children die each year from vaccine-preventable diseases.²³ Nonetheless, several long-term trends offer overwhelming evidence of a “sustainable” civilization. As the human population tripled since 1950, increasing shares of the population enjoy longer lifespans, better health, enhanced food security, greater material comfort, and a plethora of high-tech products unknown to the elites of former times.

Science—Models vs. Real World Data. Much of what passes for climate science today is model-based speculation about future impacts. To estimate future warming and associated climate change effects, the IPCC runs an ensemble of models called CMIP5.²⁴ The models on average project roughly twice as much warming as has occurred in the global lower atmosphere during the past 40 years.²⁵ A reasonable explanation for the models’ lack of realism is that they overestimate climate sensitivity—the change in average global temperature after the climate system fully adjusts to a doubling of CO₂ concentration. For example, the average climate sensitivity estimated in two dozen recent studies is 40 percent lower than the average estimated by the U.N. models.²⁶

No Planetary Emergency. Our energy-rich civilization has made the climate much more livable and is making economic development less sensitive to climatic factors. Since the 1920s, the individual risk of dying from extreme weather globally has decreased by 99 percent.²⁷ Since 1990, weather-related disaster losses as a share of global GDP declined from about 0.31 percent to 0.24 percent.²⁸

Extreme Weather. Since 1900, there has been no trend in the strength or frequency of U.S. land-falling hurricanes, and none in hurricane-related damages once losses are adjusted for changes in population, wealth, and the consumer price index.²⁹ Since the early 1970s, there has been considerable inter-decadal variability but no trend in global tropical Accumulated Cyclone Energy, a measure of total hurricane and typhoon strength.³⁰

Since the 1920s, there has been no increase in flood magnitudes in any region of the United States,³¹ and since 1900, there has been no nationwide increase in drought as measured by the Palmer Drought Severity Index.³² During the past century, the most intense U.S. drought was the 1930s Dust Bowl and the most persistent drought occurred in the 1950s.³³ Similarly, according to the IPCC, “there continues to be lack of evidence and thus low confidence regarding the sign of trend in the magnitude and/or frequency of floods on a global scale,”³⁴ and there is “low confidence in detection and attribution of changes in drought over global land areas since the mid-20th century.”³⁵

When weather patterns change, people adapt.³⁶ In the United States, urban summer heat-related mortality rates have declined, decade-by-decade, from the 1960s through the mid-2000s.³⁷ Similar reductions in heat-related mortality have occurred since 1985 in other countries as well.³⁸

Wildfires. Globally, the total area burned by wildfires declined in every decade from the 1940s to the 2000s.³⁹ The annual number of U.S. forest fires has not increased since 1985.⁴⁰ Total area burned has increased, particularly in the Western United States.⁴¹ However, the main factors appear to be internal climate variability, poor forest management, and rapid population growth in

the wildland-urban interface (WUI), areas where human population and wildland vegetation intermix or come into proximity.

Drought promotes hot weather and vice versa, and both promote fire activity.⁴² The catastrophic California wildfires of 2017 and 2018 occurred in the aftermath of a severe six-year drought. According to research sponsored by the National Oceanic and Atmospheric Administration, the drought was “symptomatic of natural internal atmosphere-ocean variability” and “not part of a long-term change in California precipitation, which exhibits no appreciable trend since 1895.”⁴³

Strong Santa Ana and Diablo winds whip up and propel the most catastrophic California wildfires, such as the 2018 Camp Fire that destroyed the town of Paradise.⁴⁴ Data from nearby Jarbo Gap weather station indicate no upward trend in Diablo frequency or wind speeds since 2003.⁴⁵ That should not be surprising. Climate change is projected to reduce the frequency and intensity of the Diablo winds by decreasing “the southwest pressure gradient that drives these winds.”⁴⁶

An estimated 88 percent of all U.S. wildfires and 44 percent of area burned are due to “human ignition” from campfires, equipment, power lines, and the like.⁴⁷ Ignitions tend to increase with population, and California’s population increased by 67 percent between 1980 and 2018.⁴⁸

More critically, population is growing rapidly in the wildland-urban interface, which expands as people build houses in previously undeveloped areas. During 1990-2010, 43 percent of all new houses were built in the WUI, which today includes about one third of all houses and 1/10th of all acres in the continental U.S.⁴⁹ This ongoing development pattern increases wildfire risk, especially where forest growth has been mismanaged or neglected.

In 2018, California’s Little Hoover Commission blamed a “century of mismanaging Sierra Nevada forests” for producing “an unprecedented environmental catastrophe that impacts all California.” In particular, the cessation of prescribed burning has produced forests “overrun with fire-intolerant trees and thick carpets of forest fuels that can turn even the smallest campfire or sparking power line into a raging firestorm.”⁵⁰

Sea-Level Rise. Since 1880, global average sea levels have risen about eight inches⁵¹—a factor with no known impact on any major 20th century economic or political development.

Evidence of a recent acceleration in sea level rise is mixed. According to the IPCC, sea levels “very likely” rose by 3.2 mm/year during 1993-2010—significantly faster than the long-term (1901-2010) rate of 1.7 mm/year.⁵² However, the post-1993 rate may be the upswing of an oscillation, since “it is likely that similarly high rates occurred between 1920 and 1950.”⁵³ On the other hand, the post-1993 rate may be lower than the IPCC estimates. Fifty-seven U.S. tide gauge records going back 60–156 years show no recent acceleration in sea-level rise.⁵⁴

The IPCC projects 21st century sea-level rise to reach 0.26-0.55 meters in the lowest emission scenario (RCP2.6) and 0.45-0.82 meters in the highest scenario (RCP8.5)—a range of about 10 inches to 2.5 feet.⁵⁵

Recent research finds that, during 2007-2016, the mean rate of sea level rise in IPCC model projections exceeds the mean rate in 19 globally distributed tide gauge records by 1.2-1.4 mm/year. Even when run with RCP2.6, the model mean exceeds the observed rates in 15 of the 19 records.⁵⁶ Evidently, climate prediction models overestimate both the current warming rate and the current sea-level rise rate.

Recent analysis of 30 Pacific and Indian Ocean atolls comprising 709 islands finds that over the past several decades, “atoll islands exhibited no widespread sign of physical destabilization in the face of sea-level rise.” Indeed, “88.6 percent of islands were either stable or increased in area, while only 11.4 percent contracted.”⁵⁷

Case studies of Japanese, Philippine, and Indonesian coastal communities experiencing one to five meters of rapid relative sea-level rise due to earthquake- or human-induced land subsidence “found no evidence that these areas will be abandoned.” This suggests coastal and island populations will be able to adapt to rising sea levels “given that even the highest sea-level rise scenarios are projected to happen at much slower rates than the case studies outlined.”⁵⁸

Notwithstanding its reliance on oversensitive models, the IPCC’s Fifth Assessment Report pours cold water on the big three climate change disaster scenarios. During the 21st century:

- Atlantic Ocean circulation shutdown is “very unlikely;”
- Ice sheet collapse is “exceptionally unlikely;” and
- Catastrophic release of methane from melting permafrost is “very unlikely.”⁵⁹

National Climate Assessment’s Bogus Headline Grabber. The National Climate Assessment, a product of the U.S. Global Change Research Program, claims unchecked global warming could reach 8°C (14°F) and lop 10 percent off U.S. GDP by century’s end.⁶⁰ To get that alarming result, the Assessment ran the overheated U.N. climate models with an inflated “baseline” emissions scenario called RCP8.5, which assumes, contrary to reasonable expectation, that coal increasingly dominates the global energy mix in the 21st century.⁶¹

Even with that biased combo, warming hits 8°C in only 1 percent of model projections⁶²—a detail the Assessment neglects to mention. The Assessment also does not mention that even if warming knocks 10 percent off annual GDP in the 2090s, U.S. per capita income is still expected to be much higher than it is today.⁶³

Perils of Climate Policy. All regulatory climate policies—whether carbon taxes, cap-and-trade, renewable energy quota, or fuel economy mandates—cost consumers and the economy billions of dollars to achieve vanishingly small hypothetical reductions in global temperature.⁶⁴ For example, a carbon tax steep enough to eliminate all U.S. CO₂ emissions would avert only 0.034°C-0.062°C of global warming in 2050.⁶⁵ Those potential impacts are smaller than NOAA’s 0.08°C margin of error for estimating changes in inter-annual global temperature.⁶⁶

The risks of climate policy are substantial and include higher energy costs, slower GDP growth, and lower household incomes;⁶⁷ higher taxes;⁶⁸ more regulation;⁶⁹ more deficit spending;⁷⁰ more litigation to grow government; more rent-seeking by politically connected interests;⁷¹ more

“harmonization” of state electricity policies to thwart citizens and businesses from voting with their feet against high-cost energy;⁷² more unauthorized bureaucratic lawmaking;⁷³ and more treaty-like arrangements to make U.S. energy policy less accountable to voters and more responsive to foreign leaders, multilateral bureaucrats, and international NGOs.⁷⁴

Even with respect to climate-related risks, carbon taxes or regulations can easily do more harm than good. Fossil fuels are the chief energy source of the economic and technological progress responsible for the improving state of the world, including the dramatic reduction in extreme weather mortality risk. Chilling economic growth will not help societies mitigate existing climate-related risks or adapt to a changing climate.

Worst of all, assuming “consensus” climatology (the U.N. climate models + RCP8.5), the Paris climate treaty’s warming mitigation goals cannot be achieved unless developing countries dramatically restrict their current consumption of fossil fuels.⁷⁵ Imposing such restrictions on nations where 1 billion people still have no access to electricity would be a humanitarian disaster.⁷⁶

Official Climate Assessments Need a Reset. Consensus climatology is addicted to overheated climate models and inflated emission baselines. It is time for a reset.⁷⁷

Meteorologists do not use the average of all models, regardless of how lacking in predictive skill, to forecast the weather. Rather, they use the most accurate model or models. Climate scientists should use a similar approach. Only one climate model in the CMIP5 ensemble accurately estimates warming trends in the bulk atmosphere over the past 40 years—the Russian INM-CM4.⁷⁸ When that model is run with a realistic emission scenario in which gas increasingly displaces coal as an electricity fuel, the world meets the Paris climate treaty’s 1.5°C warming limit with no new climate policies.⁷⁹

Conclusion. The perception of a “planetary emergency” arises from the combination of overheated climate models, inflated emission scenarios, and relentless exaggeration by political interests claiming to speak for “the science.” The very real costs of coercive de-carbonization outweigh the hypothetical benefits. The more “ambitious” the climate policy, the more likely it is to damage economic growth, consumer welfare, and our institutions of self-government.⁸⁰

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