3 Damning Equations to Defeat Global Warming Zealots

By Christopher Monckton of Brenchley   Story source: American Thinker
The true economic, social, and political cost of the measures proposed by governments (in the West only) to destroy their nations' businesses and jobs and to impoverish every household is becoming ever more visible. At last, therefore, a few brave souls in the scientific and academic communities are beginning to question what I shall call — with more than a little justification — the Communist Party line on climate change.

Three devastating equations have emerged, each of which calls fundamentally into question the imagined (and imaginary) basis for the economic *hara-kiri* by which the West is throwing away its gentle and beneficent global hegemony. Power and wealth are passing inexorably from the democracies of the West to the communist-led tyrannies of the East.

However, the three equations stand firmly in the way. It is these three equations — simple enough to be explained here for the general reader, yet devastating enough utterly to destroy the official climate change narrative — that will soon lay low the enemies of prosperity, democracy, and liberty who have, until now, gotten away with undermining the West, no less from within than from without, by their childishly apocalyptic climate change narrative.

The first of these equations was presented to you here a few months ago. Therefore, I shall summarize that discussion briefly. The equation comes in two versions: the wrong version, on the basis of which the climate science establishment felt improperly confident that unabated emissions of carbon dioxide and other harmless greenhouse gases would soon bring about Thermageddon, and the corrected version, which shows that IPCC's predictions of large and dangerous global warming are false and without scientific foundation.

First equation: The **erroneous** and **corrected** system-gain factors

$$\text{System gain} = \frac{29 \text{ K total greenhouse effect}}{9 \text{ K direct greenhouse-gas warming}} = 3.2$$

$$\text{Corrected} = \frac{260 \text{ K sunshine temperature} + 29 \text{ K total greenhouse effect}}{260 \text{ K sunshine temperature} + 9 \text{ K direct greenhouse-gas warming}} = 1.1$$

The system-gain factor is the variable by which the predicted 1.2 K direct warming by doubled CO_2 in the air is multiplied to obtain the predicted final warming by doubled CO_2 after taking account of feedback response, a knock-on, additional warming signal driven by and proportional to the direct or reference signal.

The erroneous version of the equation neglects what engineers call the base signal, the 260 K direct sunshine temperature. Climate scientists call this the emission temperature. It is the temperature that would obtain at the Earth's surface in the absence of any greenhouse gases.

The 29 K total greenhouse effect is the sum of 8 K direct warming by natural greenhouse gases, 1 K direct warming by anthropogenic greenhouse gases, and 20 K total feedback response.

Multiply the 1.2 K direct doubled-CO_2 warming by the erroneous system-gain factor 3.2 to get climatologists' 3.85 K final doubled-CO_2 warming. Sure enough, the average final or equilibrium doubled-CO_2 warming predicted by the general-circulation models in the sixth and latest generation of the Coupled Model Intercomparison Project is 3.85 K.

But the corrected system-gain factor bears in mind — as climatologists in this crucial respect do not — that the sun is shining and that, therefore, the dominant 260 K sunshine temperature must be included in the corrected equation. Therefore, the system-gain factor is not 29 / 9, or 3.2, but (**260** + 29) / (**260** + 9), or just 1.1. Then the final warming to be expected in response to the 1.2 K direct warming by doubled CO2 is not 3.85 K, but more like 1.3 K, which is small, harmless, and net-beneficial.

Climate scientists made their error when they borrowed the physics of feedback from a branch of engineering physics known as control theory. They did not understand what they had borrowed. When I pointed out their grave error to the world's most eminent climatologist, he said he did not believe that the feedback processes in the climate (chiefly the extra water vapor — itself a greenhouse gas — that the air can hold as it is directly warmed by the non-condensing greenhouse gases) would respond to the sunshine temperature.

So I asked him how the inanimate feedback processes in the climate knew that at any given moment, such as the present, they should not respond in the slightest to the 260 K sunshine temperature but should respond violently and extremely to the 9 K direct warming by natural and anthropogenic greenhouse gases. A Kelvin is a Kelvin is a Kelvin, I said. He had no answer to my question. He shuffled off, looking baffled.

It was hitherto unnoticed that feedbacks such as the water vapor feedback (the only one that really matters — all the others broadly self-cancel) necessarily respond to the entire 269 K input signal or reference temperature. Therefore (I shall not show the working for this, but trust me), just 0.01 unit of increase in feedback strength would add as much as 1 K to the final warming by doubled CO2. But it is entirely impossible to measure feedback strength directly by any method, and certainly not to a precision of only a few hundredths of a unit.

Therefore, after correction of climate scientists' error, no method of deriving predictions of anthropogenic global warming that is based on feedback analysis — as just about all of the current official predictions are — is capable of producing predictions that are any better than mere guesswork.

The IPCC, not realizing this even though it has been told about the error, bases very nearly all of its predictions upon feedback analysis. Its 2013 *Fifth Assessment Report* mentions "feedback" more than 1,100 times, its 2021 *Sixth Assessment Report* more than 2,600 times. In short, the IPCC's entire analysis of the "how much warming" question is meaningless and valueless.

How could so crass a mistake have been made? The answer is that when the climatologists asked the control theorists how to calculate feedback response, they were told that they should base the calculation only on the gain signal (in the climate, the 9 K direct warming by natural and anthropogenic greenhouse gases) and on the 20 K feedback response. Control theorists do things this way because in typical control-theoretic applications, such as electronic long-distance telephone circuits or factory control processes, the feedback response signal is 10 to 100 times larger than any other signal in the circuit. Therefore, neglecting the base signal usually makes no significant difference to the calculation, so they neglect it.

In the climate, however, it is the other way about. The base signal in the climate, the 260 K sunshine temperature, is almost 30 times the 9 K direct warming by greenhouse gases, and 13 times the feedback response. The sunshine dominates. Therefore, as common sense would in any event dictate, one cannot ignore it in carrying out the "how much warming" calculation.

The significance of this first equation, then, is that it proves beyond reasonable doubt that climatologists' profitable but misguided whining about the rate of future global warming is based on a very large and very serious error of physics that has gone undetected until now because different scientific disciplines — here climatology and control theory — are increasingly narrow in their specialization. The climate scientists did not (and do not) understand the control theory they had borrowed, and the control theorists did not (and do not) realize what climate scientists have done with the borrowed theory. It is in this disastrous interdisciplinary compartmentalization that the climate change scare is rooted.

The truth is that one must use methods other than feedback analysis to derive estimates of future anthropogenic warming. But all such methods, which are based on observation rather than theoretical manipulation of data in climate models, show far less global warming than diagnosis of feedback strength from the models' outputs shows.

The simplest observational method is this. The IPCC in 1990 predicted that until 2090, the world would warm by between 0.2 and 0.5 K/decade, with a midrange estimate of 0.3 K/decade (i.e., 2 to 5 K per century equivalent, with a best estimate of 3 K). Likewise, now as then, the IPCC predicts that final warming in response to doubled CO2 in the air will be 2 to 5 K, with a best estimate of 3 K. However, according to the University of Alabama in Huntsville, which maintains the most accurate and up-to-date satellite temperature record, since the IPCC's *First Assessment Report* in 1990 there has only been 0.136 K warming per decade.

UAHv6 global mean temperature change: 400 months January 1990 to April 2023
http://www.nsstc.uah.edu/data/msu/v6.0/tlt/uahncdc_lt_6.0.txt

Trend +.453 C° (+.136 C°/decade)
r² = 0.342

This slow warming is equivalent to less than 1.4 K per century or, per CO2 doubling, well below the lower bound of the IPCC's range of predictions, and less than half its midrange prediction.

Note how close that 1.36 K is to the 1.3 K we obtained by correcting official climatology's error of feedback analysis. A more elaborate method, known as the energy-budget method, also shows about 1.3 K warming per century or per CO2 doubling, with a range of 1 to 2 K. The first equation, then, powerfully suggests that our sins of emission have not caused and will not cause a problem, crisis, emergency, or apocalypse.

But let us pretend, just for the sake of argument, that climatologists had not perpetrated their elementary error and that, therefore, there might, after all, be an impending cataclysm. In that case, what can we do about it? The second of our three equations demonstrates that the currently favored method of Saving the Planet — replacing coal and gas generation with windmills and solar panels — will make little or no difference to global temperature.

Our second equation says excess generation E by wind and solar power in a given grid is the difference between the installed nameplate capacity N of wind and solar in that grid (their output in ideal weather) and the total mean hourly demand D for electricity from that grid.

Second equation: The fundamental limit on wind and solar capacity

Excess generation E = Nameplate capacity N − mean hourly Demand D

Obvious though this equation seems, grid operators and governments are, as far as we can discover, wholly unaware of it. But by rights it ought to signal the $E = N - D$ of any further costly destruction of the countryside and the oceans, the birds, bees and bats, the whales and dolphins by ugly solar panels and wind turbines.

Douglas Pollock, the Chilean engineer who discovered the equation, has investigated several Western national grids and has plotted the results on the graph below.
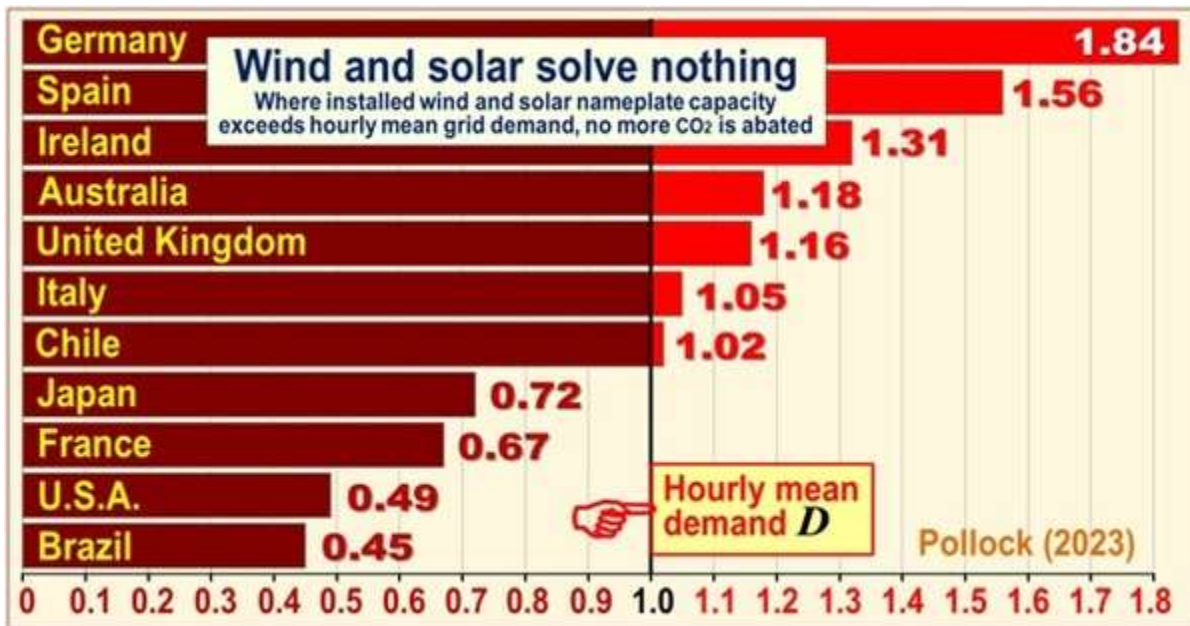
The United States could, if it wished, add more wind and solar power to its grid, but the cost would be enormous and the CO2 emissions abated surprisingly small, because coal and gas-fired backup generation must be kept running at wasteful spinning reserve at all times in case the wind drops and the sun goes down.

However, the seven countries listed as already exceeding the fundamental hourly-demand limit on wind and solar capacity will not reduce CO2 emissions at all if they try installing any more wind and solar power. All they will do is to drive up the cost of electricity, which is already eight times greater in the West than in China or India, where the expansion of the world's cheapest form of electricity — coal-fired power — is continuing rapidly.

This second of our equations also puts an $E = N - D$ to the notion that replacing real autos with electric buggies at twice the capital and running costs will reduce emissions. It won't, because in most Western countries, wind and solar power are already at or above their Pollock limit, so that the power for the buggies will have to come from coal and gas, at least until the *soi-disant* "Greens" abandon their sullen opposition to the peaceful use of nuclear power.

The Traffic-Light Tendency — the Greens too yellow to admit they're really Reds — are opposed to coal-fired, gas-fired, oil-fired, nuclear, and hydroelectric generation. Yet wind and solar

power, which they favor, cannot keep the lights on 24/7; are cripplingly expensive; are cruel to landscape, seascape, and wildlife; and, though their exceptionally low energy density, do more environmental damage per MWh generated than any other form of power.

Why, then, do the climate communists advocate wind and solar power and oppose just about everything else? They do so precisely because there is no quicker or more certain way to destroy the economies of the hated West and to end its hegemony than to destroy its energy infrastructure. For that, and not Saving the Planet, is their true objective. What they advocate makes sense when seen in that light and makes no sense otherwise.

So to our third simple but decisively powerful equation. Let us pretend not only that there may be a global warming Armageddon (though we have proven there will not be), but also that we can do something about it by the proliferation of windmills and solar panels (though we have proven that we can achieve nothing by that method except crippling our grids and vastly increasing the already prohibitive cost of electrical power, further turning the terms of trade to the advantage of the communist-led countries that are vastly increasing their coal-fired generation).

How much global warming would worldwide attainment of net zero emissions by 2050 prevent? It is a measure of the extent to which such little debate as the far left have permitted on the climate question has been stifled, and of the extent to which the objective of climate policy is political rather than scientific or existential, that this question does not seem to have been asked before.

I was in Parliament the other day, talking to a Conservative M.P. I asked him what he thought about global warming. He said, "I'm a mathematician, so I know we have to show leadership by getting to net zero emissions by 2050."

"So," I replied, "if the whole world followed the policy of just about all the British governing class and went to net zero emissions by 2050, how much global warming that would otherwise have occurred by that year would be prevented?"

His face was a picture. He had clearly never thought of asking that surely elementary question. When I told him the answer, he was dismayed. But the answer is not in doubt, for the necessary equation is again unchallengeably simple.

First, we need to know how much global warming would occur on present trends. Typically, one goes back at least 30 years, so let us go back to 1990, the date of the IPCC's *First Assessment Report*. Since then, our sins of emission have added one 30th of a unit of influence every year in a near-perfect straight line. All those trillions squandered on trying to make global warming go away have not altered that third-of-a-century-long trend one iota.
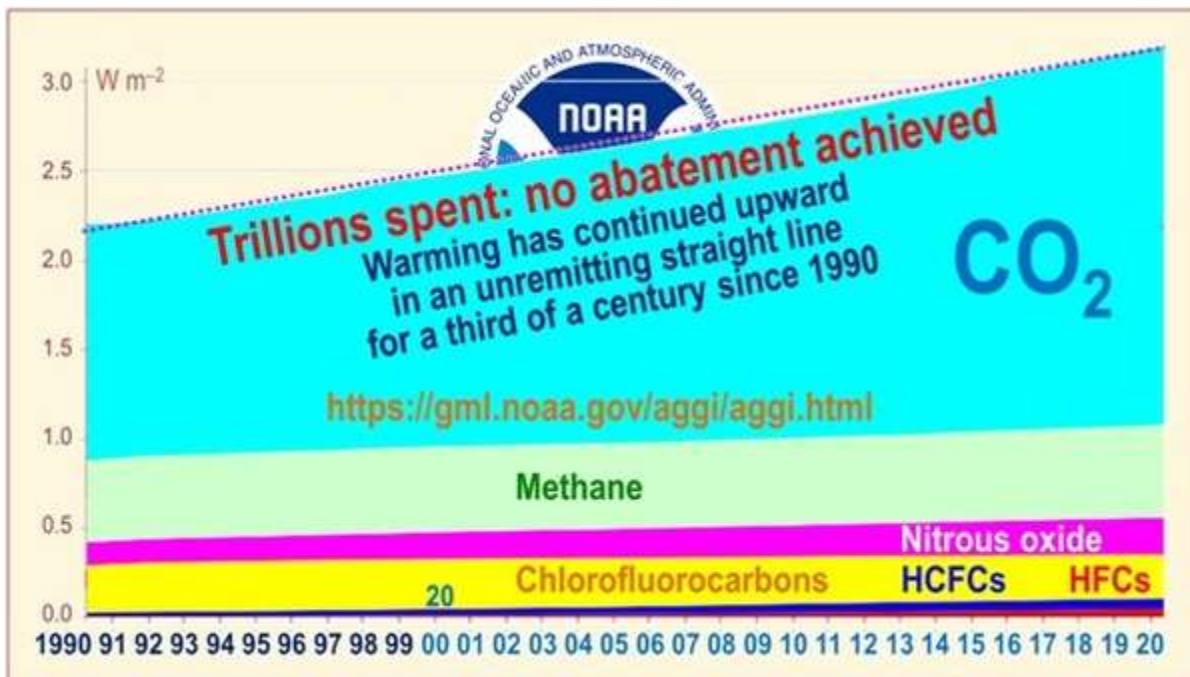
Now, if the whole world went immediately to net zero emissions today, we should be able to abate 27/30 units of our influence on the climate. But if we get there in a straight line over the next 27 years, we shall abate about half of those 0.9 units — i.e., 0.45 units.

Next, how much global warming would each unit we abate prevent? Here, as throughout, we are using official figures. The IPCC says that the warming over the next 70 years if we suddenly doubled the CO2 in the air today would be 1.8 C. This is known as the "transient doubled-CO2 response," or TCR. And, again according to the IPCC, there is an "effective radiative forcing," or ERF, of 3.93 units of anthropogenic influence in response to doubled CO2. Therefore, temperature change per unit of influence is 1.8 / 3.93, or 0.46 K per unit.

Multiply the 0.45 units the world would abate if all nations went to net zero by 0.46 K per unit, and the total warming prevented by global net zero emissions would be just 0.2 K.

The M.P., on being told this strikingly puny figure, said: "Oh, well, there must be a very large uncertainty in that number."

"No," I said, "there isn't. The IPCC predicts up to 5 K warming this century. But even if the whole world actually got to net zero emissions, which it won't because the communist-led nations are expanding their coal-fired capacity at a very rapid rate, somewhere between 0.1 and 0.3 K of that warming would be prevented by 2050. The midrange estimate is 0.2 K."

In fact, even less warming than this would be prevented. For we have used official midrange estimates to calculate the 0.2 K warming that even global net zero would prevent. But those estimates are proven to have overstated the true medium-term rate of global warming by more than double. So the true warming the world would prevent if all nations, rather than just those of the empty-headed West, were to go together to net zero would be less than 0.1 K.

Then I added the clincher. I told the M.P. that the U.K. National Grid had estimated $3.6 trillion as the cost of re-engineering the grid to meet the net zero target; that electricity generation accounts for less than a quarter of U.K. emissions; and that, therefore, the cost to the U.K. of getting to net zero by 2050 would be more than $15 trillion, or six years' total annual GDP.

Therefore, I said, every $1 billion the world squanders on trying to get to net zero emissions by 2050 would prevent only one 16-millionth of a degree of warming. Did he, as a mathematician, consider that to be value for money?

The M.P. capitulated. "The trouble with you, Monckton," he said, "is that you take impossible positions on everything, and you're always right."

Now, the purpose of this unusual exercise has been to reduce the apparently complex global warming argument to just three equations so simple that they can be explained to a layman without too much difficulty, and then to explain them. In my submission, any one of these three equations, on its own, would in a rational world be more than sufficient to lead Western governments to abandon all their global warming mitigation policies at once.

The three equations together are devastating. There is no global warming problem; even if there were, our current method of addressing it will make no difference; and even if the whole world attained net zero by 2050, global temperature would barely change.

These three arguments are simple, but they are strong. It is only because the far left have captured the debate and have silenced discussions such as this that governments have allowed themselves to be fooled. Soon, that will change, whether the far left and their paymasters and instructors in the FSB and the Ministry of State Security like it or not. For the laws of physics, of economics, and of mathematics are not up for repeal.