

Response to the REQUEST FOR INFORMATION — Anthropogenic Greenhouse Gases and US Climate: Evidence and Impacts

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Anyone should welcome the National Academies of Sciences (NAS) engaging in an honest assessment of the state of the climate, the effects of greenhouse gases on it, and what potential impacts might realistically be expected to occur, both positively and negatively, should atmospheric greenhouse gases continue rising on realistic concentration pathways.

Unfortunately, the timing of the NAS's decision to produce such a report, and the short time frame it has given itself to form a committee and produce the assessment, leads one to conclude this is more of a political exercise: an effort to undermine the recent Department of Energy energy's recent report, "A Critical Review of Impacts of Greenhouse Gas Emissions on the U.S. Climate," and derail the U.S. Environmental Protection Agency's decision to withdraw its endangerment finding as not supported by law under the Clean Air Act. Based on the makeup of the NAS's provisional committee, this effort resembles the recent attribution studies that are so much in vogue. Attribution studies are not science; rather, they assume climate change has contributed to some damaging event and with that assumption in hand, the authors of the report use computer models to compare imaginary counterfactual worlds without increases in greenhouse gases, to those with greenhouse gases. The models don't consider other factors and show no recognition of similar historical events and what drove them.

If the NAS report is not just to be an exercise in the logical fallacy of affirming the consequent, then it must address issues raised for decades by parties who, examining the data, available evidence, admitted weaknesses in climate models, and biases inherent in ground level temperature measurements, many of which have been raised and discussed in the DOE report. The NAS's report should also acknowledge that climate change, and any policies implemented to mitigate it, have and will continue to result in both benefits and costs. Any legitimate theoretical or real-world policy response to any purported threats forecast as likely to result from climate change, must acknowledge the real and tangible costs of actions to prevent it that are also likely to occur. An honest accounting of both the benefits and costs of climate action, the timelines involved, giving appropriate consideration to future expected economic growth and a realistic discount rate, as well as the realistically expected impact of these policies on reducing future temperature rise, and any ancillary proposed secondary effects of such, like slowing sea level rise or reducing the frequency of extreme weather events such as droughts, floods, hurricanes, etc...,

is critical to an honest assessment, of actions to prevent climate change regardless of what is driving it.

These considerations guide my recommendations for the literature I believe the NAS should take into consideration as it develops its report.

Rather than seeking from the outset to refute the DOE's recent assessment, the NAS should carefully consider among its key points: there is a beneficial greening effect of carbon dioxide that has real world benefits for food production and wildlife habitat; that carbon dioxide has a diminishing impact due to infrared saturation; that climate models fail to accurately reflect past temperature rise, and have consistently forecast rates of rise significantly higher than actual measured temperatures; and that the worsening of weather, human health, and human welfare outcomes projected by climate models to flow from rising temperatures, are nowhere in evidence when real-world data are considered. The world, as a whole, regionally, or locally, just isn't behaving as many researchers, general circulation models, and integrated assessment models, have projected it should respond to rising greenhouse gas concentrations.

Concerning Equilibrium Climate Sensitivity (ECS) and the warming effect of continued rising greenhouse gas emissions, the literature cited in the DOE's study is powerful and seemingly dispositive. It details the discrepancy between the ECS range produced by climate models and data driven estimates. The DOE report also discusses the fact that projected temperature ranges from ECS have not appreciably shrunk over time despite improved knowledge and how at the low end, which seems based on real-world experience as the most likely result, produces easily manageable outcomes with little cause for concern. Although the DOE doesn't dwell on it, the physics of carbon dioxide and other greenhouse gases and how they absorb infrared radiation in an overlapping fashion, how that lessens the warming impact per molecule as emissions rise – the so-called saturation effect – should be considered. Warming is logarithmic, not linear. Among the literature discussing this that merit consideration are: W. A. van Wijngaarden, W. Happer, “[Dependence of Earth's Thermal Radiation on Five Most Abundant Greenhouse Gases](https://arxiv.org/abs/2006.03098),” (<https://arxiv.org/abs/2006.03098>); W. A. van Wijngaarden, W. Happer, “[Relative Potency of Greenhouse Molecules](https://wvanwijngaarden.info.yorku.ca/files/2021/03/WPotency.pdf?x45936),” “<https://wvanwijngaarden.info.yorku.ca/files/2021/03/WPotency.pdf?x45936>); and R. Lindzen, W. Happer, and S. Koonin, “[Fossil Fuels And Greenhouse Gases \(Ghgs\) Climate Science](https://co2coalition.org/wp-content/uploads/2024/04/Lindzen-Happer-Koonin-climate-science-4-24.pdf),” (<https://co2coalition.org/wp-content/uploads/2024/04/Lindzen-Happer-Koonin-climate-science-4-24.pdf>). Lindzen, Happer, and Koonin's bodies of work have been recognized by the NAS itself, with each of them being elected to the NAS as members.

Concerning the biological impacts of carbon dioxide on plant life in general and crops in particular, as a supplement to the discussion contained in the DOE report and the copious literature it cites, I suggest the NAS carefully consider the material contained in the multivolume Climate Change Reconsidered series. This work, assembled by the Non-governmental International Panel on Climate Change, represents a comprehensive survey of the literature. Specifically of importance to the NAS's enquiry, concerning the impact of rising carbon dioxide

on life is [Climate Change Reconsidered: Biological Impacts](https://climatechangereconsidered.org/wp-content/uploads/2024/05/05-19-2014-CCR-IIb-Full-Report-web.pdf) (<https://climatechangereconsidered.org/wp-content/uploads/2024/05/05-19-2014-CCR-IIb-Full-Report-web.pdf>), Chapters 1-4 covering the impacts on plants and Chapters 5-7, which review the literature discussing the impact on terrestrial life, aquatic life, and humans.

Fossil fuel use is likely to be at the center of the NAS report, as their use is the primary way humans are contributing to the increase in greenhouse gases in the atmosphere. [Climate Change Reconsidered: Fossil Fuels](https://climatechangereconsidered.org/wp-content/uploads/2019/01/Full-Book.pdf) (<https://climatechangereconsidered.org/wp-content/uploads/2019/01/Full-Book.pdf>) would be instructive for the final committee to consider in this regard, since it is a copiously referenced review of the literature, detailing the relative benefits and costs of costs of fossil fuels.

Concerning the impacts of greenhouse gases on extreme weather events, the data tells the tale. As explored in the DOE report and detailed in [Chapter 12 of the Intergovernmental Panel on Climate Change's, Sixth Assessment](https://www.ipcc.ch/report/ar6/wg1/chapter/chapter-12/) report (<https://www.ipcc.ch/report/ar6/wg1/chapter/chapter-12/>), the impact of rising greenhouse gases on the frequency and severity of most extreme weather events is not in evidence. For most categories of extreme weather events tracked by the IPCC, it has found no discernable impact yet, or only low, very low, or medium, cause for attribution to changes in the trends of such events. For most categories of extreme weather, the IPCC doesn't expect a discernable signal to arise by 2050 or even 2100. Evidence of a crisis just doesn't exist in the data.

Three final considerations that the NAS report should forthrightly address head on:

- Carbon dioxide is not a pollutant, at least not in the traditional sense of having toxic human health effects at any foreseeable levels, but it is critical to life and life's continued flourishing on Earth. Efforts to reduce atmospheric CO₂ by ending fossil fuel use would likely have immediately deleterious effects on human well-being.
- Climate models don't accurately portray past and current climate conditions without being forced or tuned to do so because the physics and assumptions built into them alone don't produce results that track real world temperature measurements. Even the modelers and the IPCC acknowledge that the models run way too hot. Since GCMs were specifically created and especially tailored to project temperature trends in response to greenhouse gas forcing, if they fail to get that right for past and current temperatures without regular adjustment, their projections of future trends can't be trusted. Nor can the projections of Integrated Assessment Models for global or regional climate impacts, as they are built on the flawed projections of GCMs, be relied upon for public policy planning purposes in anticipation of changes in extreme weather.
- Thousands of peer-reviewed papers have been published that call into question or raise doubts about one or another aspect of the claim that human greenhouse gas emissions are the cause of various types of changes in the climate or specific impacts, since James Hansen pronounced in Senate testimony in 1998 that a discernable signal of human influence on the climate had emerged from the noise in climate data. While few if any of

these documents question the narrative of catastrophic climate change as a whole, none of those papers were ever intended to and could not do so, the weight of the these thousands of papers and the available data call into the question the narrative, at the very least indicating that the theory that humans are causing dangerous climate change merits serious reconsideration, refinement, or adjustment.

Thank you for considering my input.