

DVD VIDEO TRANSCRIPT WITH PEER-REVIEWED
SCIENTIFIC REFERENCES

CARBON DIOXIDE AND THE “CLIMATE CRISIS”

DOING THE RIGHT THING



An investigative documentary
by CO₂Science

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Carbon Dioxide and the “Climate Crisis”

Doing the Right Thing

PROLOGUE

Craig Idso

In testimony before the United States Senate’s Environment & Public Works Committee given on 21 March 2007, former U.S. Vice President Al Gore spoke in ominous tones about *global warming*, referring to it time and again as “a planetary emergency -- a crisis that threatens the survival of our civilization and the habitability of the Earth.” In doing so, he described the time in which we live as “a moral moment,” which requires what he called “moral courage,” to address what he passionately portrayed as a *moral issue*.

Likewise, in a document entitled *Climate Change: An Evangelical Call to Action*¹, which was signed by 86 evangelical Christian leaders and released to the world on 8 February 2006, it was stated as *fact* -- not opinion -- that “human-induced climate change is real,” that “Christian moral convictions demand our response to the climate change problem,” and that “the basic task for all of the world’s inhabitants is to find ways now to begin to reduce the carbon dioxide emissions from the burning of fossil fuels that are the primary cause of human-induced climate change.”

Similarly, in an article published in the September 2007 issue of *Physics Today*¹ entitled “A physicist proselytizes about countering global warming,” Sir John Houghton -- former chairman for scientific assessment of the Intergovernmental Panel on Climate Change -- attempted to bolster his and Gore’s pleas for *massive reductions in anthropogenic CO₂ emissions* as a part of his *Creation Care Crusade*, stating that “early on in the *Bible* ... Adam and Eve were put into a garden and they were told to look after that garden,” emphasizing that “that garden is Earth.”

INTRODUCTION

Craig Idso

Hello. I’m Craig Idso, Chairman of the Center for the Study of Carbon Dioxide and Global Change. As the documents we have briefly discussed clearly indicate, certain religious leaders associated with the climate-alarmist movement claim that the nations of the world have a *moral responsibility to enact laws to enforce the rules* that folks such as Al Gore and John Houghton claim to be in the best interest of both humanity and nature. In fact, some of them go so far as to actually invoke the authority of *Deity* for what they propose, almost as if they were speaking for God himself.

Sherwood Idso

Before capitulating to these overtures to our moral makeup, it behooves all of us to think a bit deeper about the matter. Just what is it that makes what climate alarmists *say* is the

right thing to do actually *become* the right thing to do? In the dozens of documents submitted to the U.S. Senate's Environment & Public Works Committee by a wide spectrum of clergy and religious organizations just a few months after Al Gore's testimony, it is evident that the similar views held by these segments of the faith community are based almost *solely* on pronouncements of the Intergovernmental Panel on Climate Change, which they accept without question as factual. Unfortunately, these pronouncements tell only *part* of the story, and a somewhat *perverted* part at that.

Craig Idso

In the two prior productions of our *Carbon Dioxide and the Climate Crisis* series – *Reality or Illusion?* and *Avoiding Plant and Animal Extinctions* -- we focused our attention on the major climatological and biological “doomsday scenarios” of Al Gore, John Houghton and James Hansen, which they contend are caused by the rising atmospheric CO₂ concentration, which they portray as the *absolute worst thing* that could ever happen to the earth.

These scary but *hypothetical* scenarios serve as their justification for saying that *morality dictates* that we reduce our usage of the fossil fuels that produce the “offending” CO₂. However, as we have shown, all it takes is a little scientific sleuthing in the peer-reviewed scientific literature and that justification *vanishes*, as their doomsday scenarios have no backing in demonstrable real-world phenomena. In fact, what we know of the real world appears to actually *refute* their strident claims. In addition, what these people *fail* to tell you -- and what we present here -- is that there is an *equally horrific* but much more *real* danger awaiting the earth and its inhabitants if the air's CO₂ content is *not* allowed to continue to rise; and this phenomenon *totally upends* the morality aspect of their contention and actually reveals their policy prescriptions to be *immoral*.

We sincerely hope this information will be of use to you, and that it will help you *decide for yourself*, first, *what* is true, and *second*, how those *truths* are absolutely *essential* for *determining* what is moral.

FEEDING HUMANITY

Sherwood Idso

How much land can ten billion people spare for nature? This provocative question was posed by Paul Waggoner² in an essay where he explored the tension that exists between the need for land to grow the crops that sustain mankind, and the need for land to support the natural ecosystems that sustain all other creatures. This challenge of meeting our future food needs, while not destroying the rest of the terrestrial biosphere in the process, was also stressed by a group of researchers³ who wrote that humans “have encroached on almost all of the world's frontiers, leaving little new land that is cultivatable.” And because of humanity's usurpation of this most basic of natural resources, Peter Raven stated in his 2002 Presidential Address to the American Association for the Advancement of Science⁴ that “species-area relationships, taken worldwide in relation to habitat

destruction, lead to projections of the loss of fully two-thirds of all species on earth by the end of this century.”

Craig Idso

In a more detailed analysis of this impending anthropogenic “global land-grab” -- which moved it closer to the present by a full half-century -- a group of ten researchers led by David Tilman⁵ concluded that the task of meeting the *doubled world food demand* that they calculated would exist in the year 2050, would likely exact a toll that “may rival climate change in environmental and societal impacts.” But how could something so *catastrophic* manifest itself so *soon*?

Sherwood Idso

Tilman and his nine collaborators report that at the end of the 20th century mankind was already appropriating “more than a third of the production of terrestrial ecosystems and about half of usable freshwaters.” Now, think of *doubling* those figures, in order to meet the doubled global food demand they foresee in the year 2050. The results suggest that *a mere four decades from now* mankind will be appropriating more than *two thirds* of terrestrial ecosystem production, as well as *all* of the earth’s readily usable freshwater.⁶

Indur Goklany

The greatest threat for terrestrial biodiversity is the fact that human beings are using land for agriculture. The greatest threat for freshwater biodiversity is that human beings are using water for agriculture. So agriculture and its use of land and water are the greatest threats for biodiversity in general.

Sherwood Idso

In terms of *land* devoted to agriculture, Tilman and his associates calculate a much less ominous 18% increase by the year 2050. However, because most developed countries are projected to *withdraw* large areas of land from farming over the next few decades, the loss of natural ecosystems to crops and pastures in *developing* countries will amount to about *half* of their remaining suitable land, which would, in the words of the Tilman team, “represent the worldwide loss of natural ecosystems larger than the United States.” What is more, they say these land usurpations “could lead to the loss of about a third of remaining tropical and temperate forests, savannas, and grasslands.” And in a worrisome reflection upon the consequences of these land-use changes, they remind us that “species extinction is an irreversible impact of habitat destruction.”

Craig Idso

So what can be done to avoid this horrific situation?

Sherwood Idso

In a subsequent analysis, Tilman and a second group of four collaborators⁷ pretty much stated the obvious when writing that “raising yields on existing farmland is essential for ‘saving land for nature’,” and they proposed a strategy to achieve this goal that focuses on three essential efforts: increasing crop yield per unit of *land area*, increasing crop yield per unit of *nutrients applied*, and increasing crop yield per unit of *water used*. In

this regard, however, Tilman and his *first* set of collaborators had already concluded that “even the best available technologies, fully deployed, cannot prevent many of the forecasted problems.” This was also the conclusion of a still earlier study,⁸ which found that although “expected advances in agricultural technology and expertise will significantly increase the food production potential of many countries and regions,” these advances “will not increase production fast enough to meet the demands of the even faster-growing human population of the planet.”

Craig Idso

So how can we prevent this unthinkable catastrophe from occurring, when it has been concluded by highly-credentialed researchers, writing in the most prestigious scientific journals, that the earth possesses insufficient land and freshwater resources to forestall it?

Indur Goklany

The way we deal with that is to reduce agriculture’s use of land and water. And the way we do that is we make agriculture more productive per unit of land, per acre of land, and per liter of water. And that is something if we were to do, it would make nature more resilient. And that’s how we can help nature adapt. And when we do that we get a lot of “core benefits,” which is a fancy way of saying ancillary benefits that will help human beings. So you can, for example, if we increase the productivity of agriculture with respect to either land or water, one of the things that it will provide us, it will provide us with more food on less land. Well let me tell you, more food is the first thing we need if you want to reduce hunger. More food means lower prices. Lower prices mean fewer people go hungry because they can’t afford it. That is the best distribution for getting food to people. It works even better than government moving food from place to place, and this way we can kill two birds with one stone. We can benefit nature and we can benefit humanity.

Chris de Freitas

One of the ironies about issues surrounding carbon dioxide, carbon dioxide is not a pollutant. There’s no way in a month of Sundays that carbon dioxide is a bad thing. In fact, carbon dioxide is like oxygen for plants. It’s food. Plants use carbon dioxide and convert it into solid carbon, if you like, *biomass*. And the level of carbon dioxide in the atmosphere, the current level, is well below the optimum level for plants. In fact, commercial greenhouse users inject carbon dioxide into their greenhouses. So from a plant’s point of view, an increase in carbon dioxide up to a doubling, round about between 800 or 900 ppm, which is over twice what we currently have, is a good thing, because plant growth would be enhanced. And the plants that benefit most are the ones that are suffering, the plants that are nutrient-stressed or water-stressed.

Ross McKittrick

It’s very important to remember that CO₂ is not a pollutant. It’s not sulfur dioxide, it’s not soot, it’s not carbon monoxide. It’s a natural part of the atmosphere; it’s part of our own respiration; and it’s plant food.

John Christy

You know when people think about carbon dioxide there are so many upsides, so many good benefits from the fact that it is in the atmosphere, that the notion of adapting to climate change seems like a pretty easy prospect given the benefits that energy has brought to our lives and the extra CO₂ has done for the biosphere. In fact, because CO₂ was much higher in the past, I've seen one presentation in particular that the world was almost going into CO₂ starvation during this current epoch. And, were it not for the extra CO₂ that the humans have put back into the atmosphere, and I like to say put back into the atmosphere because that's accurate, that there would have been more stress placed upon the plant world, and certainly on food production for people.

Craig Idso

Yes! Although the task of adequately feeding humanity some four decades from now may seem next to impossible to accomplish without stealing from nature most of the farmable land and freshwater resources on the face of the planet, *it can be done*; for we have a powerful ally in the ongoing rise in the atmosphere's CO₂ concentration that *can provide* what we can't. So how does it work?

Since atmospheric CO₂ is the basic "food" of nearly all plants, the more of it there is in the air, the better they function and the more productive they become. For a 300-ppm increase in the atmosphere's CO₂ concentration, for example, the productivity of earth's herbaceous plants rises by something on the order of 30%,^{9,10} while the productivity of its woody plants rises by something on the order of 50%.^{11,12} Consequently, as the air's CO₂ content continues to rise, so too will the productive capacity or *land-use efficiency* of the planet continue to rise, as the *aerial fertilization effect* of the upward-trending atmospheric CO₂ concentration boosts the growth rates and biomass production of nearly all plants in nearly all places.

Sherwood Idso

Elevated atmospheric CO₂ concentrations also increase plant *nutrient-use efficiency* in general -- and *nitrogen-use efficiency* in particular -- as well as plant *water-use efficiency*, as may be verified by perusing the many reviews of scientific journal articles dealing with these topics that are archived in our website's Subject Index. Consequently, with respect to fostering *all three* of the plant physiological phenomena that Tilman and his collaborators contend are needed to prevent the catastrophic consequences they otherwise foresee just a few short decades from now, a continuation of the current upward trend in the air's CO₂ content would appear to be, not just *good*, but *essential*.

Craig Idso

In the specific situation we are considering here, the degree of crop yield enhancement likely to be provided by the increase in atmospheric CO₂ concentration expected to occur over the first half of the 21st century has been calculated to be *sufficient* -- but only by the slimmest of margins -- to compensate for the huge differential that would otherwise be expected to prevail between the supply and demand for food earmarked for human consumption in the year 2050.⁸ Consequently, *not interfering* with the natural course of technological development, that is to say, *not mandating reductions* in anthropogenic

CO₂ emissions, would appear to be the *only way* we will ever be able to produce sufficient agricultural commodities to support the human population of the globe just a few short decades from now *without the taking of unconscionable amounts of land and freshwater resources from nature and decimating the biosphere in the process*. Is not *that* the moral thing to do?

Sherwood Idso

Yes, it is. And that what we have concluded in this presentation is indeed true -- and the moral thing to do -- has recently been reinforced by the unfortunate consequences of the initial implementation of one of the key components of Sir John Houghton's Creation Care Crusade, or what *we* refer to as ... *the biofuels fiasco*.

THE BIOFUELS FIASCO

Craig Idso

In the "morality" interview that he gave to *Physics Today*, which was published in the magazine's September 2007 issue, Sir John Houghton declared that "we need very large growth in renewable energy sources," among which he listed *biomass* -- as in *biofuels* -- in second place after *solar*. Already, however, it has become abundantly clear to most people around the world that meeting this so-called "need" is not only *not* helpful, it is *hurtful*.

Sherwood Idso

In a study published online in the journal *Climatic Change* on 15 February 2007, two researchers¹³ analyzed what they called the "food-fuel competition for bio-productive land," developing in the process "a long-term economic optimization model of the U.S. agricultural and energy system," wherein they found that the competition for land to grow crops for both food and fuel production leads to a situation where, in their words, "prices for all crops as well as animal products increase substantially." In fact, in the May/June 2007 issue of *Foreign Affairs*, two other researchers¹⁴ reported that the production of corn-based ethanol in the United States *already*, as they describe it, "takes so much supply to keep ethanol production going that the price of corn -- and those of other food staples -- is shooting up around the world." And to put the situation in a perspective everyone can readily appreciate, they noted that "filling the 25-gallon tank of an SUV with pure ethanol requires over 450 pounds of corn -- which contains enough calories to feed one person for a year."

Craig Idso

If there was ever a policy that should be branded *immoral*, this is it. Not only does it cripple the ability of the world's poor to purchase the food they so desperately need to sustain themselves, it does *irreparable harm* to what we could call "wild nature," as native plants and animals lose ever more habitat and freshwater resources to the great anthropogenic land-and-water grab that is needed to sustain the biofuels craze, which is

rapidly advancing the time of their ultimate disappearance from the face of the earth, as they are inexorably driven to extinction.

Sherwood Idso

Additional support for this view is provided by an article in the 17 August 2007 issue of *Science*, where another pair of researchers¹⁵ wrote that using ethanol derived from crops as a substitute for gasoline and vegetable oils in place of diesel fuel “would require very large areas of land in order to make a significant contribution to mitigation of fossil fuel emissions and would, directly or indirectly, put further pressure on natural forests and grasslands.” As an example of this unfortunate fact, the two British scientists calculated that a 10% substitution of biofuels for petrol and diesel fuel would require “43% and 38% of current cropland area in the United States and Europe, respectively,” and that “even this low substitution level cannot be met from existing arable land.” Hence, they conclude that “forests and grasslands would need to be cleared to enable production of the energy crops.”

Craig Idso

Adding insult to injury, the two scientists hastened to add that the required land clearance would result in “the rapid oxidation of carbon stores in the vegetation and soil, creating a large up-front emissions cost that would, in all cases examined, out-weigh the avoided emissions.” Furthermore, even *without* the large up-front carbon emissions, they report that individual life-cycle analyses of the conversion of sugar cane, sugar beet, wheat and corn to ethanol, as well as the conversion of rapeseed and woody biomass to diesel, indicate that “forestation of an equivalent area of land would sequester two to nine times more carbon over a 30-year period than the emissions avoided by the use of the biofuel.” As a result, they rightly conclude that “the emissions cost of liquid biofuels exceeds that of fossil fuels.”

Sherwood Idso

Coming to much the same conclusion in an article in the 27 September 2007 issue of *Nature* was yet another prominent researcher,¹⁶ who discussed the ability of forests to reduce catastrophic flooding. In addition to this important virtue, he wrote that “tropical forests, in particular, are crucial for combating global warming, because of their high capacity to store carbon and their ability to promote sunlight-reflecting clouds via large-scale evapotranspiration,” which led him to conclude that “such features are key reasons why preserving and restoring tropical forests could be a better strategy for mitigating the effects of carbon dioxide than dramatically expanding global biofuel production.”

Craig Idso

Yet another important reason for not taking the biofuel route was explained by Nobel Prize-Winner Paul Crutzen and three collaborators in a paper published on 1 August 2007 in *Atmospheric Chemistry and Physics Discussions*,¹⁷ where they calculated the amount of nitrous oxide or N₂O that would be released to the atmosphere as a result of using nitrogen fertilizer to produce the crops used for biofuels. As they describe it, this work revealed that “all past studies have severely underestimated the release rates of N₂O to the atmosphere, with great potential impact on climate warming.” And why would

greater N₂O emission rates have a tendency to cause the climate to warm? Because, as they report, N₂O “is a ‘greenhouse gas’ with a 100-year average global warming potential 296 times larger than an equal mass of CO₂.”

Sherwood Idso

The ultimate consequence of this phenomenon -- as best the four researchers could evaluate it -- *is*, in their words, that “when the extra N₂O emission from biofuel production is calculated in ‘CO₂-equivalent’ global warming terms, and compared with the quasi-cooling effect of ‘saving’ emissions of CO₂ derived from fossil fuel, the outcome is that the production of commonly used biofuels, such as biodiesel from rapeseed and bioethanol from corn, can contribute as much or more to global warming by N₂O emissions than cooling by fossil fuel savings.” As a result of these observations, Crutzen and his co-workers concluded that “on a globally averaged basis the use of agricultural crops for energy production ... can readily be detrimental for climate due to the accompanying N₂O emissions.”

Craig Idso

Clearly, Houghton’s call for “very large growth” in biofuel production to combat global warming not only does not do any *good* in this regard, it is actually *counterproductive*. Hence, it behooves everyone to carefully sift through the layers of religious rhetoric he and others employ to get to the *facts* of the matter; for appeals to morality based on faulty premises can have most unfortunate consequences, leaving sincere people feeling not only *misled* but *betrayed*.

Sherwood Idso

The lesson to be learned from this sad state of affairs is that religious principles cannot be properly applied to the subject in question without a correct understanding of the pertinent science. We must know the facts about all aspects of earth’s climate system, as well as the many biological effects of atmospheric CO₂ enrichment, together with their *interactions* with the climate system, before we can be confident that what we propose about the matter is truly in the best interest of man and nature alike. This self-evident principle should resonate with people of *all* faiths. Acting too quickly, and without thorough study, may lead even a *saint* to promote that which is *evil* in the name of God.

A MATTER OF MORALITY

Craig Idso

Before concluding our presentation, it is important to recall that near the conclusion of his testimony to the U.S. Senate, Al Gore declared that “this is a moral moment.” So also in his testimony to the U.S. House of Representatives did James Hansen declare that we cannot shrink from our moral responsibility to “preserve the planet for future generations.” In these sentiments, both the politician and the scientist are correct. But we have to ask ourselves: *what*, exactly, *is* the *moral thing to do*?

Sherwood Idso

Can any amount of ethical training *alone*, or any amount of *religious* training alone, tell us how to act in light of the two opposing views we have discussed today? The answer is a resounding *No!* -- for until one knows the *truth* of what scientists are trying to discover about the subjects in question, one cannot act in a truly moral fashion. Consider, for example, the fact that climate alarmists contend that morality dictates that we dramatically reduce our CO₂ emissions in order to prevent an unprecedented warming of the globe that they claim will lead to innumerable species extinctions, but that *we* contend that morality dictates that we *not* interfere with anthropogenic CO₂ emissions, because they will *not* cause significant global warming, and because they are actually needed to *prevent* the extinctions of innumerable plant and animal species. To determine which group stands upon the *moral high ground*, one must determine which group's contention is *correct*.

Craig Idso

And that is why it is so very important for *everyone* to carefully consider *all* of the hard-won *scientific evidence* pertaining to these subjects. One has to know which of these diametrically-opposed worldviews is correct. *Nothing else matters*. Funding sources, ideologies, politics -- even the climate-alarmist self-proclaimed *scientific consensus*, for which the 2007 Nobel Peace Prize was awarded -- they *all* fade into *insignificance* when confronted with *real-world observations* of the many phenomena in question, *or* when confronted with the *lack* of real-world evidence for these things. Consequently, to be *truly* moral demands that we strive to evaluate the pertinent facts of the matters in question, that we might thereby decide which of the two opposing views -- that of the climate alarmists or that of the climate skeptics -- comes *closest* to what each of us deems to be the *truth*.

Sherwood Idso

Morality cannot operate in a vacuum devoid of *knowledge*. Only when we *know the truth* -- and better make that the *whole truth* -- can we act in a truly moral way. And that is why we have produced this *third DVD* in our *Carbon Dioxide and the "Climate Crisis"* series, and why we will produce still others: to help *you focus* on what is actually *known* about carbon dioxide and global change, and to help you identify what is mere *speculation*, however complex or sophisticated that speculation might be. We hope our efforts may have been of some help to you in drawing your own conclusions about these important matters.

Calvin Beisner

Good stewardship is not founded upon falsehood. The issue is not what feels good. The issue is not what makes me feel good. It's not motivation or anything else. People with fine motives are on both sides of this. The issue is what's true; what is best supported by the scientific data, not by counting votes, which really has no place in science. Science is not a matter of consensus, it's a matter of evidence.

John Christy

When people talk about the moral issue of controlling carbon dioxide emissions, I say: “Yes, that’s right; it *is* a moral issue.” In 1900, the energy technology of the day supported 56 billion human-life years. That’s 1.6 billion people times 35 years life expectancy -- 56 billion human-life years. The average person lived to 35. Now, the energy technology supports about 450 billion human-life years. That is an 8-fold increase in the experience of human life; and that is a *spectacular achievement*.

I am a grandfather now; and when my little grandson runs up and hugs me around the knees, I am experiencing something in human life that 100 years ago the average person could not, at all. And so this experience of human life that’s been granted to us by energy technology is tremendous and wonderful. Therefore, the moral issue here is that we should provide for people who do not have it, *energy*, so that they can experience life that is safer, that is healthier, and that is longer. *That’s* the moral issue.

Craig Idso

And *we can do it ...* and we can simultaneously *preserve the world of nature*, with the *help* of what we often call the “elixir of life” -- *carbon dioxide*.

SHORT INTERLUDE**Craig Idso**

In closing, we hope you have found the information we have presented in this DVD to be of help to you in your quest to better understand the nature of the ongoing debate over carbon dioxide and global change. To assist in your efforts in this regard, we have included a copy of the transcript of this production on the DVD you are now watching, complete with peer-reviewed scientific references that support the facts we have presented. This transcript can be accessed by inserting the DVD into a computer, navigating to the root directory, and opening the transcript file, which is in PDF format.

We also hope you will share what you have learned in this DVD with others. If we are to avoid unintended detrimental actions in a rush to enact laws to regulate CO₂ emissions, it will only be because of the efforts of individuals like you, who demand that sound science permeate the debate. We need your help in this important grassroots effort; please join us.

Time has not permitted us to discuss many of the other important facets of the global warming debate in this DVD. If you would like to learn more, we invite you to obtain copies of our previous *Carbon Dioxide and the “Climate Crisis”* productions -- *Reality or Illusion?* and *Avoiding Plant and Animal Extinctions* -- which address a number of other topics germane to the debate. In addition, we plan to produce still other DVDs to give a more accurate view of the true state of the science surrounding this issue. Check our website often at www.co2science.org, as it is updated weekly, and watch for our next production. Thank you for your interest and your continued support.

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