

Re-Energize Iowa: An Opportunity to Lead the Nation in Stewardship of the Earth and Creation  
Jim Hansen, 5 August 2007

I would like to thank the students for inviting me to return to Iowa to participate in the Re-Energize Iowa march and to speak here in Des Moines today. The words that we just heard from the Pastor, about stewardship, fit very well with the remarks that I prepared on my trip here, which I have titled "Re-Energize Iowa: An Opportunity to Lead the Nation in Stewardship of the Earth and Creation".

Global warming differs from previous pollution problems in two fundamental ways. With water pollution or common air pollution, smog, the problems occur immediately when the pollutants are emitted. If we decide there is a problem and stop emitting them, the problem goes away. However, global warming is caused by greenhouse gases that have a lifetime of hundreds of years. So we can't wait until we have a full-blown problem and then say "Oh, we better stop emitting these". It's too late then. The gases will hang around for centuries.

The second major difference with the global warming problem is that the climate system responds slowly to the gases that we add to the air. Because of the great thermal inertia of the ocean, only about half of the eventual warming due to gases already in the air has been realized. The Earth has warmed one and one-half degrees Fahrenheit so far, but there is another one degree already in the pipeline. Moreover, there are surely more gases in the pipeline, because of power plants that we have in place and vehicles that we are not going to take off the road.

One and one-half degrees! Who cares about that? Even with another degree or two in the pipeline, who cares about a few degrees? Well, we had better all care about it, because we have already brought the planet close to some tipping points. If we pass those tipping points there will be dramatic consequences. We will leave an impoverished planet for our children, we will have been lousy stewards of creation, we will have destroyed creation for future generations.

Let me mention three major consequences of global warming, if we go down the business-as-usual path, with fossil fuel use and greenhouse gas emissions continuing to increase.

First, there is the extermination of species. We could drive half of the plant and animal species on the planet to extinction. Humans are already placing stresses on many species as we take over the land, and climate stress is being added on top of these others. Now a given mean temperature line is moving poleward, northward in the Northern Hemisphere, by 50-60 km per decade, about 35 miles per decade. That rate will accelerate under business-as-usual. Many species cannot migrate that fast. Besides, there is no place colder for polar species to go, and there is no place higher for mountain species to go. In effect, we will push these species off the planet. Many species are interdependent, so there is danger of mass extinctions.

Second, there is potential instability of the ice sheets. If additional global warming exceeds two degrees Fahrenheit, the West Antarctic ice sheet and part of Greenland surely will become unstable, causing eventual sea level rise of several meters. The disaster in New Orleans will be small potatoes compared with world wide catastrophes due to rising seas. Iowa won't be under water but impoverishment of our country will affect everyone, and hundreds of millions of refugees will create global turmoil

Third, there will be a noticeable increase in climate extremes, at both ends of the hydrologic cycle. Heavy rains and floods will increase, but so will extreme droughts and forest fires, especially in subtropical regions such as the American West, the Mediterranean, Australia and parts of Africa. Early stages of increased drought and fires are already beginning in the American West.

Can we solve the global warming problem? Yes! Indeed, this problem presents great opportunities, as new clean energies will create many high-pay jobs. But we must recognize the problem, understand it, and address it sensibly. It will not be easy, because there are powerful special interests that would prefer not to act. They don't care much about the planet we leave for our children and grandchildren. They care more about their six month profits. And they have sway in Washington. I know, I have been there, many times.

There is a well-oiled Senator from Oklahoma who says "global warming is the greatest hoax ever perpetrated on the American people". And there is a well-oiled Senator from Alaska, a state that is beginning to melt, who cannot deny the warming, but he invokes pseudoscience and says that it is all due to the sun, the sun is flickering! These officials are collecting money from special interests AND from YOUR tax dollars.

How can we solve the global warming problem? There is an example of an earlier global problem that we are now well on the way to solving: stratospheric ozone depletion. Scientists warned that certain chemicals, chlorofluorocarbons, could destroy the ozone layer. The public deserves special credit, because they stopped buying hair sprays and deodorants that used these chemicals. And the United States government exercised leadership, promoting an international agreement to phase out those chemicals. Industry denied the science at first, but they came around after they realized they could make just as much money selling substitute chemicals.

The public must also lead in the solution of the global warming problem. Special interests may have wounded our democracy, but it is still alive and well enough. The founders of our democracy established a remarkable system giving a vote to the commonest of man equal to that of the richest most powerful citizen. We all have the right to vote, and we should use that right wisely. But that is not so simple. Most candidates are likely to give lip service to the objective of avoiding dangerous human-made climate change. We need a way to smoke out who is serious, who will give priority to preserving creation for today's and future generations, and who, on the contrary, is subservient to special interests.

Here is my suggestion. Each candidate should be asked whether they will support a Declaration of Stewardship for the Earth and all Creation. This Declaration must be specific to the small number of actions that are essential for defusing the global warming time bomb. There are three actions that need to be on this list. The scientific rationale for these three statements is given in publications available, or to be available, on my web site. The exact wording of the Declaration is still to be finalized.

**Declaration 1: Moratorium on Dirty Coal:** I will support a moratorium on construction of coal-fired power plants that do not capture and store CO<sub>2</sub>.

In explanation of this first declaration, I note that it is, by far, the most important thing that must be done to stop global warming. There is more CO<sub>2</sub> in coal than in all of the oil and gas in the ground. If we phase out coal use except where we capture the CO<sub>2</sub>, the problem will be more than half licked. To qualify as "clean coal", most of the CO<sub>2</sub> must be captured. Proposed power plants that separate CO<sub>2</sub> and hydrogen, but do not capture and store the CO<sub>2</sub>, do not qualify as clean coal, although construction of a demonstration plant is reasonable.

**Declaration 2: A Price on Carbon Emissions.** I will support a gradually rising price on carbon emissions, reflecting costs to the environment, with mechanisms to adjust the price that are economically sound. A first step will be to eliminate subsidies of fossil fuels.

In explanation, the carbon price provides an effective way to support energy efficiency, conservation, renewable energy, nuclear power, and other low carbon energies, allowing these to compete against each other and permitting local choices. I note that the price on emissions does

not need to be large, but business must recognize that it will be rising. This will unleash innovation. It may be desirable to have a carbon price ‘Tsar’, analogous to the Chairman of the Federal Reserve, who will adjust the price as needed to optimize the combination of economic development and emissions reductions.

A price on carbon emissions is needed to stretch oil and gas supplies as we develop technologies needed for the world ‘beyond petroleum’. The carbon price will drive efficiency and low-carbon or no-carbon energy sources. If instead we continue business-as-usual, addicted to more and more fossil fuel use, as oil begins to run out we will be unprepared, and may begin to act like a staggering, dangerous, addict, e.g., trying to squeeze oil out of coal, or drip oil out of the tar shale by cooking the Rocky Mountains. Such acts would greatly accelerate climate change and surely destroy Creation.

These two items, a moratorium on dirty coal and a gradual rise in carbon price are the fundamental requirements for stabilizing climate and saving Creation. However, in order to make these actions work without causing disruption, a third declaration is useful:

**Declaration 3: Increased energy efficiency and no-carbon energy sources.** I will support effective actions to increase energy efficiency and conservation, remove barriers to efficiency, and increase use of low-carbon and no-carbon energy sources.

In explanation, there is great potential in energy efficiency, enough to satisfy near-term energy needs despite the moratorium on dirty coal, but barriers to efficiency must be removed. Utility profits, e.g., should be based on energy and carbon efficiencies, not on the amount of energy sold. Increased efficiency standards are needed in building codes and for vehicles.

Actions under Declaration 3, in the absence of a moratorium on dirty-coal power-plants and a carbon price, cannot solve the climate problem and cannot save Creation. By themselves, increased efficiency and increased use of renewable or no-carbon energy lower the price of fossil fuels, assuring that the fossil fuels will be mined and used. The fact is that there are enough fossil fuels to destroy Creation unless a price is attached to carbon emissions.

Congress today, as a whole, does not seem to have the gumption to address the essential needs: a coal moratorium and a carbon tax. Too many of today’s Congressmen are under the thumb of special interests or they are ignorant of the actions needed to solve the climate problem. This makes it very important to identify the positions of all candidates for election in 2008, and to achieve a large turnover in representation.

In the interim, the present Congress is considering several actions that fit under Declaration 3. Such actions are a useful preliminary that will make the actions under Declarations 1 and 2 easier to achieve. But we must recognize the limitations of such actions and support candidates who have the courage and understanding needed to address the problems and opportunities in a comprehensive way.

Until the United States, by far the largest contributor to greenhouse gases in the air today, takes effective action, it is unrealistic to expect the rest of the world to cooperate. We have a moral obligation, and it is to our economic advantage, to take actions promptly.

The bottom line is this: business-as-usual, if it continues for even another decade will be disastrous for the planet. We can have a stable climate, clean air, and an unpolluted ocean. And clean energies yield good jobs. It is up to the public to make sure that we get onto a path that stabilizes climate and allows all the creatures of Creation to continue to thrive on this planet. Iowa could lead the way in needed actions, if we halt construction of new coal-fired power plants that do not capture and store carbon dioxide, and if we lead the way in helping to identify the candidates for public office who will agree to a declaration of stewardship for the planet.