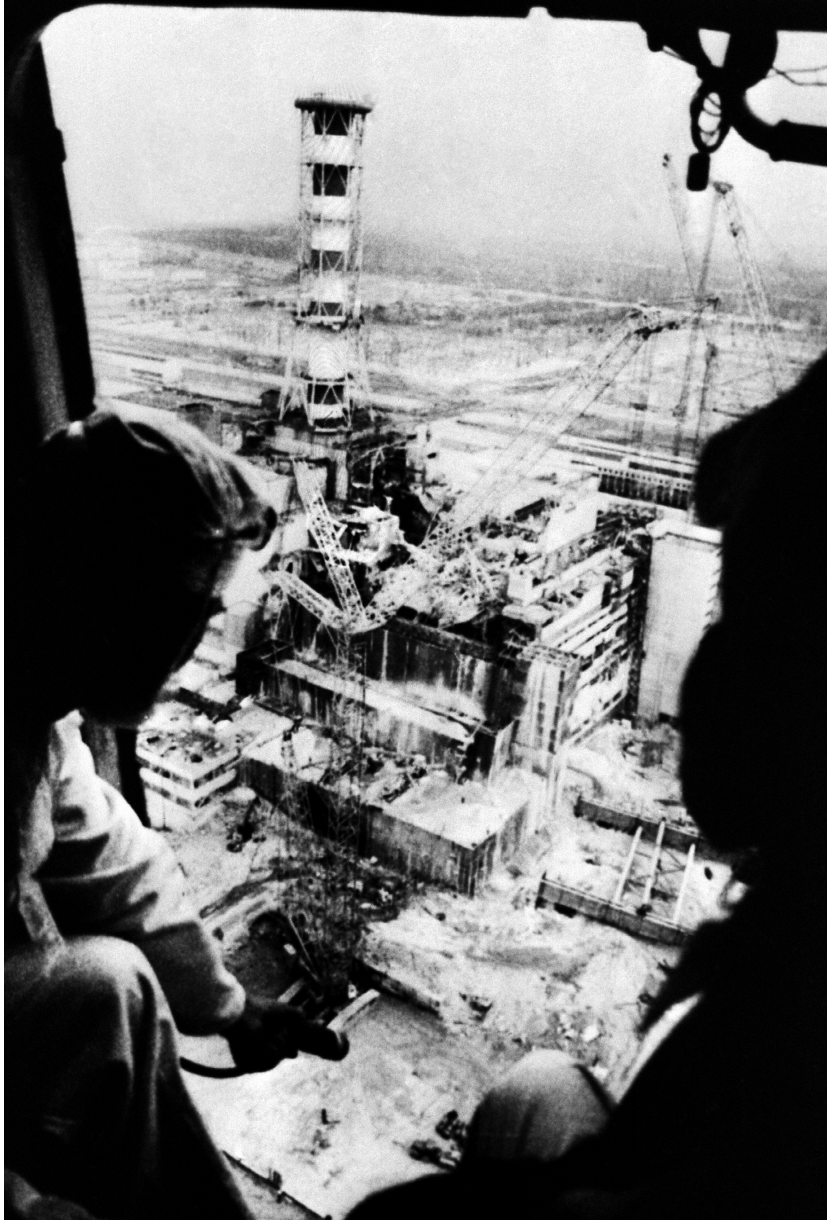


MYTH 2

**NUCLEAR POWER
IS GREEN**

Greenhouse gas emissions, if continued at the present massive scale, will yield consequences that are—quite literally—apocalyptic.... If these predictions hold true, the combined effect would be the death of not just millions but of billions of people—and the destruction of much of civilisation on all continents.

—John Ritch, director general, World Nuclear Association



Not merely greenhouse gases, but clouds of radiation being poured into the atmosphere from the burning core of the Chernobyl nuclear power station, in May 1986. (AP Photo/Igor Kostin)

ONCE UPON A TIME, ALL SELF-RESPECTING ENVIRONMENTALISTS hated nuclear power. It produced invisible pollution—radiation—that seeps everywhere, causing genetic diseases that interfere with nature. It left toxic residues that were poisonous for thousands of years. It was statist, secretive, large-scale, high-tech, complex, and expensive—the very antithesis of virtuous, simple ideals of many environmentalists. In all these fundamentals, nuclear energy fundamentally conflicts with the core green values of simplicity, small-scale solutions to local needs, and zero pollution.

And then along came the destabilizing idea that carbon dioxide (CO₂)—indeed, carbon, the fundamental building block of all animal, plant, and human life on Earth—was the *real* pollutant to worry about. Almost overnight, this new threat reversed green politics, as world governments suddenly were called on to seek high-tech solutions to fossil fuel dependency.

If the political “consensus” about climate science today has collapsed, with not only China and Russia but Canada and Germany stepping up use of fossil fuels, it lasted long enough for there to have been one important outcome. After the virtuous Kyoto Protocol was negotiated in the mid-1990s, countries that had turned away from nuclear power (due to its unsolved waste problems and the ongoing risk of nuclear meltdown) embraced it again, specifically citing the danger to the planet from greenhouse warming. Even eastern European countries, those literally in the shadow of Chernobyl, signed up for replacements for their old Soviet atomic reactors worth a good \$50 billion.

In the rush away from dirty, dangerous carbon, nuclear energy made a miraculous return to favor. That is why, as early as 2001, the International Energy Agency announced that climate change had altered the

future for nuclear energy, and why, in 2010, the British Royal Academy of Engineering, representing contractors involved in numerous nuclear power projects around the world, was confident enough to ask, in a pamphlet titled *Nuclear Lessons Learned*, “Does the Government need to do more to ensure investors select low-carbon options for future electricity generation?”

In the early days of nuclear power, Canada and Sweden were two key backers: Publicly, they are countries with a great sense of social and environmental responsibility and worries about coal-produced acid rain; privately, they are countries with a deep concern for their own struggling nuclear industries. Similarly, when today Australia and the United Kingdom respectively appear to combat global warming through a mix of energy taxes and energy handouts, it is industry lobbyists, not environmentalists, who are driving the decisions. In the United Kingdom, nuclear power is still the energy of choice for governments of both right and left, while in Australia, exports of gas, uranium, steel, and other raw materials are far more lucrative than digging up coal.

In fact, the United Nations’ newly dreamed-up International Panel on Climate Change (IPCC) was pronuclear from the start. Its first chief, a Swede, Bert Bolin, was active in Swedish energy politics, which relies on the two pillars of hydroelectricity and nuclear power, and was admired for forcing the German government to install expensive sulfur filters on its coal-fired power stations (ostensibly to reduce acid rain in Sweden). The second IPCC head, Robert Watson, was a research director at the World Bank with a reputation for actively promoting dams in the Amazon rain forest and nuclear energy for everyone else. A third key climate change activist, a German named Wolf Häfele, not only invented the 20 percent figure for CO₂ emission reductions that became the go-to figure for climate change politics for two decades (after it was made official by the final statement of the Toronto Conference “Our Changing Atmosphere” in 1988) but was a key player in the development of a new type of nuclear reactor, the dramatically expensive fast breeder. According to the energy policy analysts Aynsley Kellow and

Sonja Boehmer-Christiansen, Wolf arrived at his 20 percent target by a peculiar route. Other activists might have tried for a higher number—perhaps 60 percent—but Wolf argued that the nuclear technology was not ready yet. He showed splendid aplomb, given that the debate was taking place in the shadow of the 1986 Chernobyl nuclear disaster that had spread a cloud of poisonous radiation over much of Europe. Yet, just two years later in Sweden, climate change was cited as the reason *not* to phase out nuclear power in the country.

EVERY CLOUD HAS A SILVER LINING

When Chernobyl melted down, spreading radiation that is estimated, albeit controversially, to be responsible for the early deaths of 100,000 people, it certainly looked like bad news for the nuclear industry. Yet every cloud has a silver lining, and so it proved here. By international treaty, nuclear companies have only very limited liabilities. So it is that two decades later, an unprecedented *international* effort, equal in its own way to the entire “climate science” research effort, has directed some \$2.5 billion into cleaning up after and making safe the damaged reactor. Put another way, the profits to be made from cleaning up after exploding nuclear reactors far exceed those to be made running them safely. And is the industry ashamed to benefit from its own disasters? Not at all; these days the Russian firm behind the design even has the chutzpah to use Chernobyl in its advertising for “extra-safe reactors.”

Even if global warming science was not explicitly invented by the nuclear lobby, the science could hardly suit the lobby better. It seems to require directing previously unimaginable subsidies toward “carbon-free” energy, of which nuclear claims to be the only serious option at present, a trick achieved by skewing the debate toward electricity production and ignoring the oldest forms of energy—wood, water, and animal dung—which still are key energy sources for many people—and not only in the developing world. Once the nuclear industry convinces

everyone it is the *key* energy source, rather than the irrelevant and highly costly cherry on the pie, its fossilized competitors are subject to crippling costs.

Thus it was on December 10, 2009, that an extraordinary group of 100 world leaders and their most esteemed scientific advisors gathered in gloomy Copenhagen, Denmark, for an unprecedented conference with just one task—but a huge one: saving the planet. The lead item on the agenda: how to stop runaway global warming.

The 15,000 delegates and officials, 5,000 journalists, assorted heads of state, plus celebrities including Leonardo DiCaprio, Daryl Hannah, Helena Christensen, George Clooney, Archbishop Desmond Tutu, and Prince Charles, were in Copenhagen to decide how best to reduce emissions of a deadly gas—CO₂—that was already thought to have caused droughts, the melting of the polar ice caps, and deforestation and the spread of diseases in the tropics.

Nobel Prize winner and senior US statesman Al Gore had set the tone earlier, when he declared in his popular documentary film *An Inconvenient Truth*:

Humanity is sitting on a time bomb. If the vast majority of the world's scientists are right, we have just ten years to avert a major catastrophe that could send our entire planet's climate system into a tail-spin of epic destruction involving extreme weather, floods, droughts, epidemics and killer heat waves beyond anything we have ever experienced—a catastrophe of our own making.

Yet a week later, the conference broke up and the 15,000 delegates, 1,200 limos, and 140 private planes departed, in a swish of CO₂ emissions, with nothing decided: no CO₂ reduction, no emergency aid for threatened countries, only a vague promise to look at the issue again . . . in five years.

What went wrong? It seemed as if the entire climate change campaign, which had dominated national and international politics for 20 years, ever since the Kyoto Protocol was signed in sunny Japan, had fizzled out

with hardly a whimper. Or, more accurately, that climate change policy was a house of cards that had collapsed with the first breath of cold wind.

That Kyoto Protocol had been a remarkable achievement. On its face, it committed every country that signed up to reduce CO₂ emissions.* Actually, in fact, it did not do so, as, by a rather neat sleight of hand, “target levels” were set for reducing emissions that countries were already well under. In reality, Kyoto was less about reducing carbon dioxide emissions and more about countries agreeing among themselves to pay more for their electricity supplies. Or rather, every government that signed agreed to make consumers pay more. Hapless energy users the world over would pay about \$350 billion, in return for which global temperatures were supposed to be reduced by *about one-fifth of one degree*.

To put that in perspective, the same amount of money could have satisfied, at a single stroke, access to basic healthcare, education, clean water, and sanitation for all Third World inhabitants. It is true that such things are not useful if you happen to have starved to death by desertification in Africa or been submerged under rising seawaters in the Pacific—if that is really the choice. But to swap these options for a drop in temperatures of one-fifth of one degree?

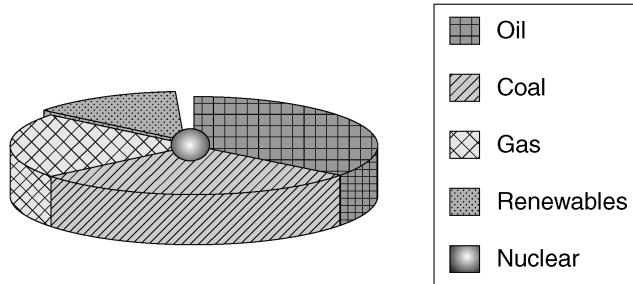
You would have to be very green—that is, naive—to sign up for that. Or very cynical. And, of course, there are plenty of both kinds of people.

Originally the role of CO₂ in the atmosphere must have seemed like a very good subject for scientific research and academic debate. But somewhere along the line it also became a tool for governments to intimidate their populations into passive acceptance of very real changes—from the tiny (switching to fluorescent light instead of incandescent; permitting wind turbines to crowd previously sacrosanct hilltops) to the major, such as widespread destruction of rain forests for biofuels and accepting nuclear power plants and all their dangerous consequences.

The counties pressing the climate change arguments during the Kyoto conference had in their national interests an array of businesses linked to

* Despite making supportive noises, the United States never, in fact, ratified the treaty.

INGREDIENTS THAT MAKE UP THE WORLD ENERGY PIE



This is the primary energy pie, consisting of both commercial, tradable energy and non-commercial, informal energy sources, such as wood for heating.

Notes: Oil provides 48,000 terawatt-hours (TWhs); 1 million tons oil = 4.5 TWhs.

What is a TWh? One TWh corresponds to 10^{12} watt-hours, or the energy required to heat approximately 50,000 houses in advanced industrial countries for one full year.

Coal provides 39,000 TWhs; gas, 30,000 TWhs; and renewables, 18,000 TWh. Renewables other than hydroelectricity include wood, both commercial and noncommercial, animal dung, solar heat and electricity, wind electricity, geothermal energy, nonwood/nondung biofuels, and others. Wood and dung are major sources of energy, along with hydroelectric power, which on its own contributes some 3,000 TWhs of energy, approximately 2.5 percent of the total world energy mix.

Finally, nuclear power provides just 8,000 TWhs. In 2010, nuclear secondary output—electricity—equaled about 2,900 TWhs. That makes it the cherry on the world energy pie.

Data Sources: IEA, US EIA, BP Statistical Review

and dependent on nuclear power as well as concerns about the high cost of domestic subsidies for coal. How many times have we been told that oil money is behind climate skepticism? That is true only if it is a kind of cunning double game. Oil companies are also one of the winners in the drive against coal, and restrictions on mining make their gas holdings more valuable. And all governments stand to gain from policies that result in a greatly expanded tax base, particularly if the new taxes are on essentials, such as energy, and difficult to evade. Many of the protocol's supporters—Germany, Japan, and the United Kingdom—had very expensively subsidized (and unionized) coal industries of their own that their governments would have liked to run down. By the end of the twentieth century, for example, Japan was paying five times more to mine its own coal than it would have cost to buy coal on the open market from Australia.

For this reason, climate change was originally, and remains, a rich country's hobby dominated by a club of largely Anglophone countries: The United States, the United Kingdom, and Canada lead the research, supported by those reliable allies, Australia, Germany, Japan, and the country with the original (acid rain) interest in atmospheric pollution: Sweden.

Because of these national interests, climate change became a simple story about too much CO₂ directly pushing up global temperatures. The politics behind it, however, is far from simple and anything but progressive. As mentioned, one factor was the political drive to shut down the highly subsidized coal industries of Germany and the United Kingdom. Another was the realization that a protocol that made nuclear power "clean" would be immensely profitable to certain advanced economies. But a third was the realization that the creation of a new trade in licenses to emit CO₂ could be the most lucrative game ever, potentially generating trillions of dollars. The sums involved in energy policy are enormous.

Money like that was enough to get many scientists to agree with the alarming research on climate change. But to collect all the voices of the on-message scientists and to make sure they were heard, the "rich countries club" created the IPCC in 1988. The organization was based on the United Nations (UN) structure that had been proved so effective in getting worldwide assent to environmental regulations controlling acid rain and gases suspected of causing holes in the ozone layer and of course, public consent to nuclear power, via the International Atomic Energy Authority.

If the book-length research reports of the IPCC are scientific, few of the resulting key summaries for policy makers are; rather, these papers are edited line by line by political appointees of national governments.

Many of the latter are hard-nosed political animals from Sweden, Canada, and the United States. They include Al Gore and his acolyte, Timothy Wirth, who as undersecretary of state for global affairs once stated: "We've got to ride this global warming issue. Even if the theory of global warming is wrong, we will be doing the right thing, in terms of economic policy."

This cynic wrote this famous line in the UN's landmark report on global warming (the Second Assessment report of the IPCC): "The balance of evidence suggests a discernible human influence on global climate."

Being political in origin, the output of the IPCC's research is curiously immune to what Karl Popper, the twentieth-century philosopher of science, calls "falsification." Most claims are couched in terms of "probabilities" with such wide error bands that future events could scarcely fall outside them. Indeed, some of the few sections that could be falsified have caused embarrassment later—like the claim that the Himalayas would melt "by 2035" or that, in a hotter world, malaria would extend its range to Europe. (Both claims are ill-informed. It would take many centuries for the Himalayas to melt even in an incredibly hot world; as for malaria, it was endemic in Europe for centuries—but then, rather than the weather changing, the marshes were drained.) The nice thing about climate change for politicians, though, is that for many of the claims, just like a politician's answer, there is no possibility of falsification. There is nothing that counts as evidence against. Increased rainfall in the northern hemisphere is evidence of climate change, but so too is decreased rainfall in the southern hemisphere. Or vice versa, when it suits. Melting of ice in the Arctic is evidence of climate change, but the observed cooling of the Antarctic is not problematic: It can be explained in terms of "other effects," such as changes in ocean currents. Hot summers in the one place are excellent supporting evidence, but cooler summers in another (e.g., in northern Europe) are not disproofs but merely require additional ad hoc hypotheses.

Today no one thinks that human emissions of CO₂ are going to be reduced, let alone phased out, as the original policy required. If CO₂ really causes the planet to overheat, then, assuredly, it *is* going to overheat. The subject is essentially a scientific debate. It therefore has its shades and nuances of meaning but contains no neutral truths and remains far from settled. Not so the political debate. This debate is—and has always been—both unsubtle and unequivocal. For politicians around the world,

climate change has provided a useful stick with which to beat opponents. It represents the triumph of opportunism over principle and of special interests over social justice. That is why the nuclear industry has flourished in its shadow.

With the paid-for support of both the scientific community and the free but erratic and ill-informed green campaigners, it was open season on “dirty” fuels, such as coal and oil, with money all around for new initiatives—hydroelectric projects and biofuel plantations in the tropics, not to mention considerable amounts for the plucky, if negligible, contributions of solar and wind. But the biggest winner in the climate change drama has undoubtedly been nuclear power.

Enter the Public Intellectual Greens, to be distinguished from the public intellectual environmentalists, whose fault, if they have one, is merely being a bit smug. Once the apparatchiks of the UN and international politics had done all they could to create the new science of climate change, the next job was to win over public opinion—to convert the taxpayers and consumers. And it was here that the role of intellectuals became vital. These are people such as Stewart Brand in the United States, Bruno Comby in France, and James Lovelock and George Monbiot in Britain, all well-known authors as well as (respectively) an electrical engineer, an inventor, and an environmental columnist for the *Guardian* newspaper in London.

Comby is well-known in green circles, but he started life as an electrical engineer for France’s nuclear industry, before a change of career path led to a book called *Delicious Insects* in 1990. Six years later, Comby set up the Association of Ecologists for Nuclear Power (AEPN is the French acronym), which claims 10,000 members worldwide and says that nuclear power is, well, “the future.” The apparently independent work of such ecologists underpins the campaigns of the international stars of climate change doom, led by Al Gore and Rajendra Pachauri, as well as a galaxy of professional green campaigners, such as Patrick Moore. The cofounder of Greenpeace International, Moore was one of the “rainbow warriors” who narrowly avoided being blown up by the French secret service on the boat

of the same name and now runs a pronuclear institute called the Clean and Safe Energy Coalition. These “ecologists” want, in particular, to see nuclear power exported around the world, saying that, in their considered view, it is the only “clean” way to generate power.

The influence of some Public Intellectual Greens is considerable. In France in 2011, for example, Nicolas Hulot tried to become the ecologist party’s presidential candidate and indeed, earlier on, exercised a sort of political power by fronting a whole range of energy taxes solely motivated by concern about climate change. Although his personal ambitions came to naught, in the (post-Fukushima) 2012 French presidential election, the official line of the Greens there was to maintain the existing number of nuclear power stations until new renewable sources might begin to make them obsolete.

Another influential environmentalist is Stewart Brand, famous in the 1980s for his *Whole Earth Catalog* of green goodies, who in recent years has recommended a diet of small nuclear reactors, pointing out (correctly) that windmills and solar panels produce only negligible amounts of electricity. Acknowledging that this advice remains controversial, he told a newspaper that he was not trying to be pronuclear, only “pro-arithmetic.” Jean-Marc Jancovici in France has echoed that sentiment, pointing out that since today fossil fuels supply 80 percent of the world’s energy, the question has to be asked, What, once they are exhausted, is going to replace them? This is indeed a good question, but Jancovici’s reply, coupled with assurances that nuclear waste is less hazardous than pesticides and “does not explode,” is more illustrative of the rhetorical style of green campaigns than actual, facts-based arguments.

The eccentric and aggressive Monbiot advises true environmentalists to join with him in advocating nuclear power as the second-best way to “decarbonize the electricity supply.” His first choice, oddly enough, is gas with carbon capture and storage. This solution holds up even less well under scrutiny. Suppose for one moment his plan was adopted—how long before acceptably “clean” gas reserves would be exhausted? Certainly it is not long enough to provide any sort of a solution to future world energy needs.

Monbiot is, however, only a lukewarm convert to nuclear; hence his gas dream. Better to listen to the argument of another British self-styled environmental warrior, Mark Lynas, who, when he is not campaigning for nuclear power, can be found hunched under oilskin in the Antarctic or sweating in a jeep in the Amazon rain forest. In 2008, Lynas set out all the reasons he could think of for supporting nuclear power in an article for the left-leaning British political magazine the *New Statesman*, called, practically enough, “Why Greens Must Learn to Love Nuclear Power.” He swiftly dismisses the problem of nuclear waste by citing a study that says most of it will decay away naturally in “less than a thousand years.”

Lynas also trots out the low estimates of deaths from nuclear accidents past, using such sources as the US Nuclear Regulatory Commission (a government body, with a structural interest in minimizing the consequences of nuclear accidents) and a book by Professor David MacKay called *Sustainable Energy—Without the Hot Air*, which attempts to prove that nuclear power is one of the safest ways to generate electricity, with only about one death for every 10 gigawatts a year. But the apex of Lynas’s argument is that the IPCC (yes, that group again) says that nuclear produces hardly any CO₂ emissions—about “40g CO₂-equivalent per kilowatt-hour” (whatever that may mean), which is similar to good old wind power or “renewable electricity from other countries’ primarily from solar farms in the North African desert.” Naturally, Lynas prefers wind turbines, but he adds: “[I]t is vital to stress that neither I nor MacKay nor any credible expert suggests a choice between renewables and nuclear: the sensible conclusion is that we need both, soon, and on a large scale if we are to phase out coal and other fossil fuels as rapidly as the climate needs.”

So what is the true Green response to world energy needs? Lynas notes that “an anti-nuclear report” argued that an additional 2,500 reactors would need to be built by 2075 in order to significantly mitigate global warming and that the report’s authors seemed to have thought that this was a pipe dream. On the contrary, he says, “it sounds eminently achievable,” since it is, he calculates triumphantly, “only a five-times increase from today.”

And finally, on to a much grander if highly eccentric figure, former NASA scientist James Lovelock, a key proponent of both catastrophic climate change theory and salvation by nuclear power. Lovelock is typical of the newest and most schizophrenic thinking, where doom is constantly threatened unless we learn to love the friendly atom. He says, "What makes global warming so serious and so urgent is that the great Earth system, Gaia, is trapped in a vicious circle of positive feedback." And Lovelock has the chapter and verse on this:

Extra heat from any source, whether from greenhouse gases, the disappearance of Arctic ice or the Amazon forest, is amplified, and its effects are more than additive. It is almost as if we had lit a fire to keep warm, and failed to notice, as we piled on fuel, that the fire was out of control and the furniture had ignited. When that happens, little time is left to put out the fire before it consumes the house. Global warming, like a fire, is accelerating and almost no time is left to act.

Gaia, by the way, is the Greek name for Mother Earth, and Lovelock's idea here is that Earth is a living, conscious being that constantly adapts and adjusts itself to circumstances. Earth is not static, but alive and dynamic. Why, then, one might ask, can Earth not cope with the 0.01 percent of CO₂ being put into the atmosphere by human industries, as opposed to what nature itself puts there via causes such as the outgassing of carbon from the seas, where almost all the planet's carbon is stored? Humans are said to produce some 7.2 gigatons (Gt) of CO₂ a year, but the ocean has about 39,000 Gt of CO₂ dissolved in it, some of which becomes CO₂ in the air and some of which becomes limestone, joining the other 70 million Gt of carbon in Earth's rocks.

Yet even if Lovelock knows his earth sciences, as far as CO₂ goes, he clearly has his eye less on the wonderful complexity of nature and more on some 7 billion guilty individuals whom he seems rather sure must be punished.

In an interview with the British magazine the *New Scientist* in January 2009, Lovelock predicted that up to one-half of the world's population

could die from runaway global warming in the period 2050 to 2100. By comparison, when Earth had just a billion people on it, Lovelock says, “their impact was small enough for it not to matter what energy source they used.” This new twist on Malthusian doctrine (in Lovelock’s version there are too many people and too few nuclear power plants!) cheerfully ignores, of course, all the contrary facts. Lovelock makes almost no reference to the fact that less than one-sixth of the world’s population, living in the rich, developed economies, consume about one-half of the world’s fossil fuels, while the vast majority of the world’s population use the rest and consequently emit much less CO₂ per person.

A quick look at Greek myths, for example, shows the consequences of ancient peoples chopping down and burning forests on the face of Gaia. The planet was scarcely able to brush aside the first billion people, but eventually it did adapt. And so, you might think, it will continue to do so. You might think that, but Lovelock and the Green lobby do not.

Lovelock again: “As individual animals we are not so special, and in some ways are like a planetary disease, but through civilisation we redeem ourselves and become a precious asset for the Earth; not least because through our eyes the Earth has seen herself in all her glory.”

For environmentalists like Lovelock, it is very satisfactory that climate change theory sees the folly of humankind as resulting from the Industrial Revolution. Environmentalists seem to hope that the sins of the past are—at last!—now going to have to be fully paid for.

Although there is much competition, Lovelock considers himself to be the voice of true environmentalism. Indeed, in a long article on the benefits of nuclear energy in *Reader’s Digest*, he opines that “it was an invention of mine that kick-started the environmental movement.” This was a gadget called the Electron Capture Detector, which measures air cleanliness, that he coinvented with another garage-based handyman. With it, Lovelock says, evidence of the spread of the pesticide DDT worldwide and of “chemicals called CFCs (chlorofluorocarbons) that were accumulating and damaging ozone in the atmosphere” emerged.

As it happened, the US government was unusually interested in this matter, perhaps because US companies held all the key patents to replacements for these CFCs (up till then used in household refrigerators and aerosol cans). This led to Lovelock working with the National Aeronautics and Space Administration, where he studied the question “Is there life on Mars?”—and that led him to climate change theory.

CFCs are now banned, and refrigerator companies in the United States are doing very nicely. Yet still “Mother Earth is in trouble.” Lovelock writes again on behalf of suffering Gaia and, it seems, of many environmentalists.

Every time we click a light switch or start a car, something sinister happens. From power station chimneys and car tail-pipes, immense volumes of gases such as carbon dioxide are pumped into the sky where they pollute the environment and act like a greenhouse, overheating the globe.

Fortunately, there is a much better option for Planet Earth; a new “green” solution. Lovelock again:

A lifeline does exist and it’s dangling in front of us. By grasping it now we can rescue the world from both the consequences of global warming and our looming energy shortage. It’s safe, proven, practical and cheap. Our lifeline is nuclear energy.

To back this up, Lovelock briefly summarizes the problems with fossil fuels. To power a modern city, oil needs “a 1000 km [620-mile] line of railway trucks filled with expensive coal,” which when burned will leave behind “500,000 tons of toxic ash.” Oil “emits nearly as much greenhouse gas as coal plus huge volumes of sulphur and other deadly compounds that turn into acid rain.” Gas (favored by the likes of Monbiot) is slightly better, but the supply is “vulnerable to terrorists.” But finally on to nuclear. Here is a power source that “feeds on about two truck loads of

(NOT) WHY VENUS IS UNINHABITABLE NOW

The greenhouse effect story starts with a Swedish (Nobel Prize–winning, actually) chemist named Svante Arrhenius, who at the start of the twentieth century observed through his telescope that Venus was totally obscured by clouds. He wrote in a book called *The Destinies of the Stars* that a “very great part of the surface of Venus is no doubt covered with swamps” with humid conditions not unlike the tropical rain forests of the Congo. With Arrhenius’s bold sweep of the pen, Venus thus became, for much of the twentieth century, a place for science fiction films and writers to place all manner of unusual life-forms, from galactic dinosaurs to superintelligent carnivorous plants. Omniscient scientists often compared the planet to Earth in the Carboniferous Period. But years later, better technology began to reveal a rather less hospitable planet. Observations using spectrometers revealed an atmosphere consisting not of water vapor but almost entirely of CO₂. And the planet was much hotter than previously thought. *Hundreds* of degrees centigrade hotter. Too hot even for dinosaurs.

Shame! Thus it was that the June 1982 issue of *Popular Science* magazine proffered dire warnings of the effect of pumping too much CO₂ into the atmosphere, explaining: “Venus once had as much water as Earth. It lost the equivalent of Earth’s oceans in the process of becoming a runaway greenhouse.”

So runaway, indeed, that a block of lead placed on the surface would turn into a puddle. No wonder that Venus’s beautiful seas boiled away long ago. Could a similar thing happen here? scientists were asked. The reply: The scenario is complex but seems to fit observations. Asked about Earth’s own future, one farsighted chap warned that “the amount of carbon dioxide we’re putting into Earth’s atmosphere today is the most dangerous of all human activities.”

cheap and plentiful uranium imported from stable countries like Canada and Australia.” And the toxic waste? “A few bucketfuls.”

It is not actually even that toxic, Lovelock adds. “The radiation from a reactor is tiny: about as much as that from our own bodies.” According to the UK’s National Radiological Protection Board, for ex-

ample (which Lovelock thinks is a very good judge, despite the fact that it is less a public watchdog than the public relations arm of the nuclear industry), radiation doses from nuclear power stations amount to less than 1 percent of normal annual exposure from things like background radiation in rocks. “Compared with known cancer risk such as smoking and poor diet, the risk from non-medical, manmade radiation is about 1/100th of one percent.”

WHOEVER PAYS THE ORGAN GRINDER CHOOSES THE TUNE

In her book *Climate Money* (published in 2009 by the US Science and Public Policy Institute), Joanne Nova gives one of the first assessments of what CO₂ trading and carbon finance had cost the US government and therefore taxpayers over the years, using government-sourced documents for her research. Nova states that she discovered a “well funded [and] highly organized climate monopoly” based on highly selective or, as she puts it, “unaudited,” scientific views, opinions, and theories.

Perhaps Nova’s most scathing accusation is that the \$79 billion that she calculates has been spent by the US governments on climate-related activities over the last 20 years has “created a powerful alliance of self-serving vested interests.” In the best spirit of “Baptist and Bootlegger alliances,” these interests are, in her opinion, compelled primarily by the lucrative profits to be garnered from emissions and carbon trading, when, or if, it becomes obligatory in the United States. As for the massive amounts of government cash poured into climate business since the end of the 1980s, even the \$30 billion it spends on research into climate “science” has, to date, not produced “a single piece of empirical evidence that man-made carbon dioxide has a significant effect on global climate.” What the research has produced, naturally, is a new breed of highly “environmentally concerned” scientists.

The economist Bruce Yandle coined the phrase “Baptist and Bootlegger coalitions” to describe cases where the economic interests of businesses and the moral concerns of campaigners coincide. The virtuous crusade to

save the planet from runaway global warming, and the grubby business of selling nuclear power, are paradigmatic examples.

In this analogy, both Baptists and bootleggers want the sale of alcohol banned—but for different reasons. The Baptists want it banned because they consider alcohol to be morally wrong, while the bootleggers want it banned because then its price will rise and they can make easier profits. The Baptists would vehemently deny that they were assisting the bootleggers, just as Greenpeace and its partners in the Climate Action Network would bristle at the suggestion that they were assisting the nuclear industry and the oil companies with their holdings of natural gas, or even the expansionist instincts of states.

Bootleggers are, of course, completely amoral. Only money motivates them. Recall that all this nuclear-friendly advocacy was taking place in the context of the 1986 Chernobyl nuclear disaster, which spread a cloud of poisonous radiation over much of Europe and led to the ostensible “phasing out” of atomic power in many countries.

Equally, although skeptics point to ways that climate change policies may increase human suffering, not reduce it, what they do not realize is that some people *want* this increased suffering. For many environmentalists, like the most fiery Baptist preachers, humanity deserves to be punished for its poor stewardship of Earth. The aim is not to save people or even living creatures and forests but to save the *planet*. And that is a long-term business.

Climate change bootleggers do not limit themselves to promoting reactor sales; there are also huge profits to be made from wind farms and solar power (as long as the manna of government subsidies keeps flowing). Bootleggers proffer the same plausible sales spiel: Fossil fuels are dirty; renewables are clean. Coal is dirty and working class, conjuring images not only of gritty unionists going on strike but of working-class dads, as portrayed by D. H. Lawrence, returning home dirty, drunk, and in a filthy temper. Renewables, in contrast, and even nonrenewable nuclear power, are high-tech, clean, and modern, evocative of sunshine and fresh air. Overwhelmingly staffed by casual, nonunionized labor (contrary to

the high-tech image), renewables are as close to economic nirvana as any surviving admirer of Margaret Thatcher or Ronald Reagan can get.

And in fact, all the most determined and most media-friendly environmental experts, whether these are advisors to the clique of hedge funds operated by Al Gore or the “environment skeptics” like Bjørn Lomborg or James Lovelock, are word perfect with their new enthusiasm for nuclear power. Green gurus recommend it because it is “safe, clean, and effective.” Brushing aside all those nuclear accidents you may have heard about, they say that so-called civil nuclear energy from its start in the early 1950s has proved to be the safest of all energy sources. Lovelock puts it this way:

We must stop fretting over the minute statistical risks of cancer from chemicals or radiation. Nearly one third of us will die of cancer anyway, mainly because we breathe air laden with that all pervasive carcinogen, oxygen. If we fail to concentrate our minds on the real danger, which is global warming, we may die even sooner, as did more than 20,000 unfortunates from overheating in Europe last summer [2003].

For such new nuclear romantics, disasters like Chernobyl are just media puffery. Lovelock even says that, in fact, “only 42 people died, and they were mostly firemen and plant workers.” Firemen and plant workers! Such people are paid to get frazzled occasionally. They serve the cause of perfecting nuclear reactors.

The Green Guru goes on to add that since the explosion, UN experts have found no evidence of birth defects, cancers, or other health effects, “with one exception. Some 1,800 non-fatal thyroid cancers have been found in people who were children at the time. It is not even clear that they were triggered by the accident and they could have been avoided had the authorities issued warnings to stay indoors for 24 hours and issued iodine tablets.” Other UN reports put the figure rather higher—about 8,958 people higher. But that is statistics for you.

Compare the pristine cooling pond at the heart of a nuclear reactor, or even the quietly ticking banks of electronic monitors in the control

rooms, with the hellish disorder of a dismal pit in China where chunks of trees are burned under an orange and black sky to produce charcoal. During the run-up to the 2009 Copenhagen conference, the latter image was much reproduced to accompany articles about the need to reduce CO₂ emissions. Yet, ironically, converting wood into charcoal is actually a renewable, green process (if rather smoky), and in some countries it attracts government subsidies.

Ironic, too, that “renewable energy” as a term also includes biofuels, waste incinerators, and even dams across the Amazon, all projects that are hugely suspect environmentally. The public image, of course, is all solar panels and wind turbines, yet even these come with their own environmental problems. Solar panels are made with some of the most hazardous chemicals known to industry, such as arsenic, gallium, and cadmium for their semiconductor materials, a fact that helps explain why manufacturing plants are so expensive in countries with tough environmental and health regulations and why the panels generally are made by workers in developing countries. Wind turbines come with access roads and electricity pylons attached, not to mention thousands of tons of cement to anchor them, and offer their own peculiar intrusion into the landscape. But more to the point, neither of these sources can make energy in anything near the volumes that conventional power stations can. They simply cannot provide energy on the scale required to replace fossil fuels. The bottom line is that 99 percent of energy in the United States (for example) is provided by sources other than wind and solar, and that is not likely to change anytime soon. (International Energy Agency statistics give their combined role worldwide as about 1.25 percent of world energy.)

This is pretty complicated, so neutral observers can understand why so few journalists, let alone experts, can be bothered to report or discuss any of it. But let us at least agree on the polar bears.

When Al Gore made his critically acclaimed film, *An Inconvenient Truth* (2006), starring some polar bears stranded on melting ice off the coast of Alaska to support his claims about global warming, he used photos that had been taken by a marine biology student, Amanda Byrd, while

she was on a university-related research cruise in August 2004, a time of year when the fringe of the Arctic ice cap *naturally* melts. It was later distributed by Environment Canada, a Canadian government department, to media agencies.

With an enlarged version of the polar bear picture on the screen behind him, Gore states, “Their habitat is melting . . . beautiful animals, literally being forced off the planet. They’re in trouble, got nowhere else to go.”

However, according to Byrd, when she took the picture, the bears did not appear to be in any danger, despite what its widespread use in worldwide media to illustrate coverage of global warming implied. An Environment Canada spokesman, Denis Simard, told the *National Post*, a national Canadian newspaper, that you “have to keep in mind that the bears aren’t in danger at all. It was, if you will, their playground for 15 minutes. . . . [T]hey were not that far from the coast, and it was possible for them to swim.”

The polar bear still is the symbol of the effects of global warming—but it is a cleverly designed marketing symbol, not a rational, scientific marker.

The pure white of both polar bear fur and the animals’ dwindling iceberg home are contrasted with the nasty, dirty charcoal pits and dark, sinister black coal . . . the traditional “black/white” dichotomy. But in fact there is only one thing even purer than driven snow, and that is the gleaming, glowing heart of the atomic reactor. No wonder so many modern environmentalists have fallen in love with it.

TOXIC SOLUTIONS?

If you still have a soft spot for “renewable” (a misleading term that covers ecologically disastrous hydroelectric schemes too), do not be too misty-eyed. Because wind turbines operate at such incredibly low efficiencies, and most of the power they do generate is at the wrong time and in the wrong place, before wind power could contribute 20 percent of, say, Britain’s electricity, there would have to be about 100,000 wind turbines. That would require a dedicated six-mile strip right around the United Kingdom to make room for them. Appropriately, that would even displace Britain’s one Green member of Parliament—in the resort town of Brighton.

Would solar energy be any better? No. The Sun is good at providing power for things like light-emitting diodes (LEDs) that light up at night along the side of a suburban driveway, but it is woefully inadequate for mass-power generation. Even to power a 7-kilowatt (kW) household heat pump would require about 1,227 square feet of standard photovoltaic arrays; to replace a small power station would require about six square miles of land. There are more efficient solar systems, but they use chemicals like arsine and phosphine. Arsine is almost as toxic as methyl isocyanate (which, when 40 tons were unintentionally released in Bhopal, killed 3,000 people and injured 200,000 more). The fact is, all solar photovoltaic systems involve toxic chemicals.

Speaking of deadly chemicals, fittingly, it was a chemist who helped sound the alarm about CO₂. Margaret Thatcher called in the scientists to help her come up with reasons to shut down Britain’s coal industry. Not because she hated northerners—she came from Grantham herself, not so far from the Nottingham coalfields—but because British coal costs billions of pounds each year more to mine than foreign coal costs to import. She realized that if Greens could come up with spurious reasons to declare coal a deadly form of pollution, she could save the country money while appearing virtuous. Well, it did not happen quite like that, but the legacy is still there. Today Britain and Europe have dismantled their coal industries, burned most of their reserves of natural gas in privatized power stations, and now are about to run up hitherto unheard-of sums for windmills and tidal technology. And Europe is still heavily dependent on coal, but now it is imported—as much as 300 million tons a year—or about three-fifths of a ton for every single inhabitant of the Union.