

# Some Political Aspects of the Environmental Crisis and Climate Change

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## Headings List

**Principles of Democracy from the U.S. Beginnings**

**How the Enterprise of Modern Science Evolved to What it is Today**

**Environmental Crisis Summary**

**Historical Trends**

**Occasional Failures**

**Two Cultures**

**More than just science ignorance and denial**

**Implications for Climate Policy**

## Principles of Democracy from the U.S. Beginnings

James Madison attended the Constitutional Convention that hammered out and ratified the original U.S. Constitution. George Washington presided, but other founding fathers were not present. John Adams, Thomas Paine, and Patrick Henry were involved in its writing and passage and James Madison wrote a document that formed the model for the final version of the original.

Thomas Paine wrote: “The mind once enlightened cannot again become dark,” which points to a belief by the framers of the Constitution that democracy cannot work if those having all the power, we the people, are insufficiently informed to cast enlightened votes. In his Foreword to Shawn Otto’s book [The War on Science](#), Lawrence M. Krauss writes that Paine’s quote is true of individuals, but not necessarily true for societies. He points out that “the scientific wisdom of the Greeks was largely abandoned in the Middle Ages.”

The point is that the founders of the U.S., people like Thomas Paine, Thomas Jefferson, and Benjamin Franklin, believed that science and (more generally enlightenment) are paramount in guiding the affairs of state. Jefferson and Franklin not only read and believed in the value of science, they devised apparatus and tested designs and other ideas with real prototypes, which we might today call experiments.

As a result of this early guidance and a remarkable Constitution, the country ultimately became a place for scientific study, technological innovation, and progress in many fields of endeavor. Central to that history was the proposition “that public policy should be based on rational reflections on sound empirical evidence” in the words of Lawrence Krauss. Holding to this principle led our country to one of its greatest periods, culminating in the unbridled optimism and hope of the 50s and 60s. The country was working, advancing, becoming better, and in charge of itself.

Important components of that success were the advances brought by science and technology, coupled with political systems that largely worked, and with political and media reliance on fact and evidence-based information to guide decision-making and public policy, as envisioned by the founding fathers.

An early guiding principle we can take from the early history of the United States is this: For a very long time, the U.S. political system has followed the principles laid down by the founding fathers, and it mostly still does, by:

*Using fact and evidence-based information to guide decision-making and public policy*

### **How the enterprise of modern science evolved to what it is today**

It is worth looking at the evolution of science to its current form. The earliest of what we might today call scientists followed their curiosity, the first step in developing new understandings of the world around us. They explored nature—at least those aspects they found interesting and worthy of exploration. They observed the world and thought about it. They wrote down their observations. They followed these with preliminary interpretations or explanations of what they conjectured might be going on, i.e. the behavior of each piece of nature they were observing and trying to explain.

In the early days, the available tools to perform experiments and make tests of their hypotheses were fairly primitive, so resulted in observations or explanations that were only approximately correct.

As mathematical and investigatory tools improved, early scientists proposed theories and did experimental tests of those theories, to see how correct they might be, i.e., how well they predicted correct outcomes of further experiments. Note that the main question was not *why* things happen but *how*. Questions of *why* generally lead us into the realms of philosophy and religion, out of science.

Improved tools, processes, and methods led to greater refinements in growing fields of science and other knowledge over time, with the greatest advances seen in the 19<sup>th</sup> and 20<sup>th</sup> centuries. Along the way, individuals, companies, and governments each had important roles in the process. Individuals were great for generating ideas, early experiments, and early prototypes and products. Business enterprises developed to manufacture and perform further R & D toward improving their products and finding new ones.

Government played an increasingly important role because it could pursue more speculative and longer-term research efforts that might not always deliver useful products (or monetary income from their manufacture and sale) for many years. The



combination of individuals, businesses, and government turned out to produce the greatest advances in science, technology, and health care the world has ever known.

The result of these combined enterprises was a flowering of civilization, the advancement of knowledge, technology, science, and understanding. It led to many of the things, some illustrated above, that we value in our more modern, industrialized societies.

### **Environmental Crisis Summary**

By the early 70s, however, significant evidence had accumulated that there was a down-side to the flowering of industrial civilization. Serious adverse side-effects were discovered to result from some aspects of that grand development. Many of the great manufacturing and product advances were found to produce chemicals and other solid, liquid, and gaseous outputs, which adversely affected human health, spoiled landscapes, and damaged ecosystems worldwide. Our global ecosystems form the life-support system for the human inhabitants of planet Earth. Their damage threatens the future health and livelihoods of all people. We also started realizing how inter-connected all those ecosystems are with the physical systems that make Earth such a dynamic and beautiful place to live:

- Soil for plants, animals, and agriculture
- Pollinators like bees that are essential to agricultural production
- Clean air to breathe
- Fresh water to drink, irrigate crops, power hydroelectric power plants, carry our boats
- Sea water in which many sea creatures live and on which we depend
- Forests and other vegetation on land and in the water, which provide many crops and which help keep the carbon content of our atmosphere at a healthy concentration
- Oil, coal, and natural gas, deposited underground eons ago and withdrawn for the energy used to power much of our industrial civilization was a real godsend to civilization. Unfortunately, we have discovered that when burned, its combustion by-products leak into the atmosphere. accelerate climate change and produce noticeable global warming. The latter has become the most serious and immediate threat to industrial civilization yet encountered.

These serious threats are growing as industrialization spreads and as human population grows around the world. Reversing or at least stabilizing these trends at long-term healthy (i.e. sustainable) levels has become one of the most serious challenges facing us. Overcoming it will require the very best our modern society has to offer. It is therefore important that we consider how well our society is currently equipped to meet the challenge.

### **Historical Trends**

Over the history of civilization many societies developed well by using science, facts, and evidence to guide public policy. Generally, such societies flourished and benefitted from excellent colleges and universities, many with widely available public education, highly developed fields of knowledge, emphasis on the arts, invention, improved building and other design, advanced public infrastructure, and generally open

societies. The trend was definitely positive and is documented in scores of books on history, art, culture, and the development of science.

### **Occasional Failures**

Along the way there have been examples of societies that became gripped by fundamentalism and authoritarianism, pushing out science- and fact-based approaches in favor of narrow ideologies, rigid dogmatism and/or narrow theocratic ideas—often with severe restrictions on how decisions should be made and how people must live. Examples:

- The advanced society in Greece, when it reached the Middle Ages largely abandoned scientific wisdom
- Many Arab countries, where early mathematics, geometry, and scholarship were born, abandoned much of these in the tenth and eleventh centuries with the emergence of religious fundamentalism
- Fascist Europe of the late 30s and 40s was a terrible scourge on wisdom and culture that took humanity enormous expenditures for war-fighting and many deaths to stop its advance
- Cambodia, under ruler Pol Pot in the 70s, killed people for being academics or even for wearing eyeglasses (suggesting literacy)
- Turkmenistan’s government today does not act in the public interest; most of its population is impoverished. It is one of the most repressive countries in the world, having no freedom of association, expression, or religion. All print and electronic media are under control of the state.
- Iran, whose people enjoy many of the benefits of civilization’s advance including generally good education and the fruits of modern civilization, became ruled by a narrow, fundamentalist, religious political system suppressing rights, craving power, and using technology for cruel outside terrorist activities.

Many of these cases ended in failed or highly degraded societies—over-populated, poverty-ridden, and without adequate educational, science, and medical systems.

### **Two Cultures**

Over the last few decades, authoritarian, fundamentalist, and anti-intellectual/anti-science ideas have crept into parts of several otherwise well-developed and highly functioning western countries. The consequences are new factions of those societies that have become dangerous often leading to these consequences:

- Threats to the economic and environmental stabilities of countries affected by this new political and societal shift
- “Brain-drains” of eminently qualified professionals—scientists, engineers, physicians, and teachers—finding the political and social atmosphere surrounding them too hostile to continue working effectively in that country, an early-warning sign that shouldn’t be overlooked
- Inability or unwillingness to deal with
  - the destruction of critical planetary ecosystems—the life-support systems of humanity
  - Accelerated extinction of plant and animal species

- Depletion of selected nonrenewable minerals and other resources (mostly non-polluting) upon which industrial society has become dependent
- Inadvertent climate change and its many consequences
  - Ocean acidification , with adverse effects on coral reefs, [shellfisheries](#), and other saltwater ecosystems
  - Melting of land ice (glaciers) and the rising of sea level, inundating low-lying areas around the world, including island nations and [some of the world's largest cities](#)
  - Melting of floating sea ice which exposes dark water to absorb more solar heat, accelerating the warming of ocean water—one example of what are called “feedback loops” accelerating climate change
  - Increasing heat and duration of droughts, with adverse effects on wildfires, agriculture production, and the replenishment of valuable fresh water aquifers
  - Stronger and more frequent storms: tornados and hurricanes which do direct damage and flood large areas affected
  - Growing and very serious freshwater shortages
  - Worsening of air pollution by increasing ground level ozone, the main component of smog, leading to higher hospital admission rates and higher death rates for asthmatics, plus worsened health of people with cardiac or pulmonary disease
  - Increased wildlife extinction rates for species unable to adapt to the changes produced
  - A United Nations report, [IPCC 2014](#), concluded that vertebrate species are disappearing 114 times faster than they should, according to a [2015 study](#).
- Losses in our abilities to withstand the immense social and economic upheavals the scientific revolution is producing, as the rush of new technologies expands and further impacts our lives
- Difficulties resulting from too-rapid commercialization of incomplete scientific knowledge of the past, before the adverse consequences of such widespread use have been identified
- The huge challenge of dealing with a world armed to the teeth with the products of the military-industrial complex, including weapons that could destroy nearly all life on the planet in an instant

In the U.S, this trend has produced its own version of the two different cultures:

- **Those attempting to adhere to the basic principles laid down by our founding fathers:** Using fact and evidence-based information to guide decision-making and public policy. Fortunately, these are still in the majority around the country and especially in our colleges and universities and many of our state and local governments.
- **Others selectively abandoning those very principles.** A political culture has arisen, including both aberrant conservative and liberal viewpoints, which follow half-baked beliefs (eventually elevated to ideologies) that what individuals *want* to be true *are* true, regardless of the fact and evidence-based information opposing those ideologies. In the best of cases, this is just intentional ignorance by those who know better (were trained in school to follow facts, rational thinking, and evidence based principles). In other cases, the educational system has failed to instill these qualities in the thinking processes of its graduates. In the worst of cases, willful ignorance and firm belief based on inadequate and/or incorrect knowledge are developed and sustained by a aberrant Twitter,

Facebook, and talk radio counter-culture, currently spewing out what is called “fake facts” and “fake science”.

### **More than just science ignorance and denial**

This relatively new anti-science trend includes a pervasive shift in how some media reporters and especially some politicians justify the policies and plans they propose and report on, as well as the conclusions they draw and the plans they propose. Counter to what our founding fathers hoped for, no longer is it necessary to cite legitimate, well-investigated, well-researched evidence and clear facts (scientifically developed or otherwise) about a case or story.

It is now too often a matter of stating what you or your ideology or theocracy *want* you to believe. Decisions and public policy are increasingly based on emotion and desire rather than fact-based evidence supporting the direction you or the person being quoted concludes is best.

In the U.S., this has resulted in a polarization of the U.S. Congress so severe that it has become nearly unable to act on important bills that could improve the lives of Americans, passing only a few easily justified bills that draw little opposition from either of the two warring sides. As Shawn Otto wrote in his previously cited book *The War on Science*, “Democratic governments the world over are increasingly paralyzed, unable to act on many key issues that threaten the economic and environmental stability of their countries and the world. They often enact policies that seem to run against their own interests, quashing or directly contradicting well-known evidence. Ideology and rhetoric guide policy discussions, often with a brazenly willful denial of facts.”

Journalism, of all things, has also fallen victim to this trend, with “fair and balanced” replacing “fact and evidence based on sound scientific knowledge” in some news reporting. In the ultimate perversion of what used to be good journalism, many reporters and their editors now feel obligated to accompany documented scientific and evidence-based knowledge with “the other side of the issue,” giving equal weight to fallacious statements by those opposing a clear, scientific, fact-based conclusion. This is supposed to be fair and balanced? It is not.

In most of these cases, the erroneous and wildly wrong or inaccurate “side” of the story shouldn’t even be mentioned. The reporter should stick with fact-based, well-researched and peer-reviewed evidence alone. If there are two equally valid but differing scientific fact-based views held by credentialed spokespersons, both can be covered in the story.

Investigative journalism is supposed to be for we the people, examining information that we don’t have the time, expertise, knowledge, or tools to find for ourselves, presenting the evidence truthfully and leaving it to us to make our own conclusions.

Often, and worse, Otto writes, “Budget-strapped and increasingly unable to discern between knowledge and opinion, science-illiterate journalists too often aid the slide into unreason. Many journalists believe there is no such thing as objectivity, rendering otherwise brilliant minds unable to discern between objective knowledge developed from years of scientific investigation, ... and a well-argued opinion made by an impassioned and charismatic advocate on the other.”

Peabody-winning news anchor Don Shelby talks to journalists about this misconceived objectivity: “Some journalists don’t even attempt to establish the reality or truth of a story. Instead, they go out of their way to present ‘both sides,’ as if this were admirable.”

And what I tell them is that “balance” doesn’t mean you present stories evenhandedly. It means you present them like a set of scales, and if the vast weight of the evidence is on one side of the argument, that’s the side that should get the vast weight of your reporting. You don’t push on the other side to falsely balance the scales. You tell the truth. That’s the “balance” we used to talk about in journalism. Today what we too often see is called “false balance,” because it presents both sides as if they have equal weight of the evidence, when that is objectively not true.

With “fake news” a current topic of discussion, perhaps we should also call false balance “fake balance.” It is also important to understand the difficulties faced by the public and even the journalists in this current age of rapid scientific discovery and advancement of knowledge in many fields that is inadequately covered in schools and many colleges and universities.

It can only get worse, as Otto explains, “Over the course of the next forty years, science is poised to create more knowledge than humans have created in all of recorded history, completely redefining our concepts about—and power over—life and the physical and mental worlds as we assume editing control over the genetic code and mastery in our understanding of the brain.”

This rush of new knowledge often ends up in amazing technology that has great impacts on our lives, but is often too complex mathematically and conceptually for the ordinary citizen to understand. Yet the number of well-trained and salaried science and technical journalists in the U.S. is dwindling, making well-written stories and well-produced video news reports few and far between.

Otto concludes, “Without a better way of incorporating science into our policymaking, democracy may ultimately fail its promise. We now have a [large and growing] population that we cannot support without destroying our environment—and the developing world is advancing by using the same model of unsustainable development. We are 100 percent dependent on science and technology to find a solution.”

In a remarkable section of his book, Otto offers 52 substantive questions greatly affecting our lives and our futures that require fact and knowledge based, well-researched and reported, investigation to answer. The investigations are being or have been done, but are not adequately reported to the populace by the major media. They require a lot of web searching and search-results-sorting efforts to ferret out. That’s what investigative journalists are for.

The problem extends to other areas as well. As Otto wrote in a 9 October 2016 article in *Scientific American*, “Such rejection is essentially an authoritarian argument that says ‘I don’t care about the evidence; what I say/what this book says/what my tribe says/what my wallet says goes.’ [emphasis added]” Otto quotes Francis Bacon (English philosopher, statesman, scientist, and early advocate for the scientific method, d. 1626), who pointed out the problem at the beginning of the scientific revolution, writing: “What a man had rather were true he more readily believes.” This human tendency is carefully guarded against by

credentialed scientists. You can read Otto's article "A Plan To Defend Against the War on Science" at [this link](https://www.scientificamerican.com/article/a-plan-to-defend-against-the-war-on-science/): <https://www.scientificamerican.com/article/a-plan-to-defend-against-the-war-on-science/>

Otto's book on the subject, *The War on Science: Who's Waging It, Why It Matters, What We Can Do About It*, details the problem and offers solutions more completely. It can be ordered from Amazon at [this link](https://www.amazon.com/War-Science-Waging-Matters-About/dp/1571313532): <https://www.amazon.com/War-Science-Waging-Matters-About/dp/1571313532>.

Otto offers in the above two writings examples of the effects of this new dual-culture political environment in our society, especially in our media. Here are some of those examples on both the liberal and conservative ends of the political spectrum.

- "Those on the political left often unwittingly abet the right's antiscience efforts by arguing that truth is relative, harboring suspicions about hidden dangers to health and the environment that are not supported by evidence, and selectively rejecting science that doesn't affirm their health-food and back-to-Eden value system."
- "The leftists are right that there are serious environmental and health threats afoot from poorly regulated industries, but they undermine their credibility when they extend these suspicions to scientifically unsupported ideas like vaccines cause autism, cell phones cause brain cancer, or genetically modified crops are unsafe to eat."
- "By seeking arguments that support preexisting beliefs (however laudable the concerns that motivate them) instead of looking to scientific evidence, these progressives give up the very critical-thinking and argumentation tools liberals once used to defend modern society against its authoritarian attackers."
- "Fears that GMO (genetically modified) food is unsafe to eat, equally unsupported, propel a national labeling movement. Fears that cell phones cause brain cancer or wi-fi causes health problems or water fluoridation can lower IQ, none supported by science, also largely originate from the political left."
- "...the antiscience of those on the right—a coalition of fundamentalist churches and corporations largely in the resource extraction, petrochemical and agrochemical industries—has far more dangerous public-policy implications because it's about forestalling policy based on evidence to protect destructive business models. As well, the right generally has far more money with which to spread disinformation and attack science on a host of issues."
- "...the political right has largely organized itself along antiscience lines that have become increasingly stark: fundamentalist evangelicals, who reject what the biological sciences have to say about human origins, sexuality and reproduction, serve as willing foot soldiers for moneyed business interests who reject what the environmental sciences have to say about pollution and resource extraction."
- "Industry's war against science isn't limited to climate change. A host of public relations campaigns over the last five decades have spent billions of dollars with the express purpose of sowing public doubt about science. The techniques are usually the same: highlight cherry-picked facts provided by paid physicians or scientists whose alternative conclusions support your agenda; emphasize the need for healthy debate (when there really is none); attack the integrity of mainstream science and scientists; emphasize the negative consequences of tackling the problem; feed stories to

sympathetic journalists (or purchase a news outlet); fund 'Astroturf' groups to create the illusion of grassroots support; call for 'balance'; and give money to lawmakers who will vote your way."

- "In the 1960s tobacco companies, for example, mounted a campaign to create public uncertainty about the scientific evidence that smoking causes cancer. The sugar industry funded research at Harvard University for decades to create uncertainty about sugar's role in heart disease while promoting fat as the real culprit. The chemical industry vilified [Rachel Carson](#) to create uncertainty about the environmental problems caused by pesticides. Construction and resource extraction industries paid consultants to help them create uncertainty about the health risks of asbestos, silica and lead."

## Implications for Climate Policy

The evidence of climate change has overwhelmingly been studied and concluded to be real and accelerated by certain actions of humanity, after years of measurements, research, and peer-reviewed discussion and evidence-examination. In spite of this, those with monetary or personal political motives are simply claiming it to be false, calling climate change a hoax.

There are two challenges, therefore, facing our country (and indeed, the world) about the serious threats and growing consequences of climate change, especially global warming. First is to overcome its rapid acceleration, resulting in a need to ramp up our efforts to overcome at least the human-induced component.

We already have a great model for doing this. There is a [layer of ozone gas](#) (O<sub>3</sub>) high in the atmosphere that is good at absorbing most of the ultraviolet (UV) radiation coming to us in the solar radiation from the sun. Too much UV exposure on the skin of humans leads not only to a suntan but possibly to serious medical maladies such as sunburn and, with excessive exposure, to [genetic mutations](#) that can lead to skin cancer. Diminishment of the ozone layer for a long period of time could have serious adverse consequences to human life.

In 1974, chemists at the University of California at Irvine detailed threats to the ozone layer in our atmosphere from chlorofluorocarbon (CFC) gases, then commonly used in spray bottles and as coolants in many refrigerators. These were rapidly accumulating in the atmosphere, causing the ozone hole which forms every year over Antarctica to grow and spread, reducing the ozone layer's protecting influence.

Eventually, the world recognized the problem, switched from CFCs in refrigerants and spray bottles to an [alternative propellant](#), mainly a variety of hydrofluorocarbons or HFCs. That worked, and resulted in a largely [successful reversal](#) of the damage CFCs were doing to the ozone layer, giving us great hope that global warming can be reversed similarly, by serious worldwide action.

Footnote: It was recently discovered that the HFCs are powerful global warming gases, more so than even CO<sub>2</sub>, having as much as thousands of times greater global warming potential than CO<sub>2</sub>, molecule-for-molecule, according to a [22 July 2016 speech](#) by Secretary of State John Kerry. Kerry wrote that efforts are

underway to fix the problem with an amendment to the UN's Montreal Protocol and he said, "we've already agreed that 2016 is the year to make that happen."

The problem now, is to accelerate the elimination of *all* greenhouse gas emissions going into the global atmosphere, including HRCs, CO<sub>2</sub>, CH<sub>4</sub>, and several others. In many countries around the world, including the U.S., market forces combined with growing evidence and real consequences of global warming are already driving energy investors away from fossil fuel combustion (which releases global warming gases as combustion products and through leakage from natural gas wells and refineries) to energy conservation and clean renewable energy sources. However, there remains significant resistance to the change-over from the fossil fuel companies and some electric utility companies.

The second challenge is to eliminate the powerful influence of authoritarian, fundamentalist, anti-intellectual and anti-science forces in politics and in the mass media that is greatly inhibiting efforts to stop the harmful emissions of fossil-fuel based greenhouse gases. This comes at a terrible time, during which substantial public and government support is needed to accelerate the transition away from fossil fuels. Fortunately, several U.S. government agencies have major programs dealing with climate change, which at least can inform, encourage, and offer assistance toward the change-over. They are listed below with web links to their departments working on the technical aspects of the problems and offering substantive information to the public.

U.S. Government: <http://www.globalchange.gov/> , NASA: <climate.NASA.gov> , NOAA: <https://www.climate.gov/> , DOE: <http://www.energy.gov/science-innovation/climate-change> NREL: <http://www.nrel.gov/analysis/> , LBNL: <http://eesa.lbl.gov/departments/climate-sciences/> , U. S. Dept. of Agriculture: <http://www.globalchange.gov/agency/department-agriculture> , U.S. Dept HHS: <http://www.globalchange.gov/agency/department-health-human-services> U.S., EPA: <https://www.epa.gov/climatechange> , NSF: [https://www.nsf.gov/news/special\\_reports/climate/](https://www.nsf.gov/news/special_reports/climate/) , Smithsonian Institution: <http://ecosystems.serc.si.edu/climate-change/>

The best of the two cultures mentioned above has spawned non-profit, civil society organizations dedicated to doing what they can to accelerate the transition to a fossil-free future. A selected list is provided below, with brief descriptions.

I give special mention, at the end, to the [Citizens' Climate Lobby](#), as I believe it to be doing the most, on the ground, in mobilizing citizens for direct political action. I also believe CCL's programmatic approach has the best chance for success, even in the current political climate. Placing a steadily rising fee on carbon entering the economic system will increasingly discourage its extraction and marketing (shifting energy investors to clean renewable energy alternatives). Distribution of the fee proceeds to the citizens of each country enacting such a fee-and-dividend program adds no new government nor spending and will stimulate the country's economy, put money into consumers' pockets, benefit the middle class, stimulate jobs in the renewable energy industries, and avoid serious political controversy. I published a slightly more detailed summary of the CCL approach at [this link](https://medium.com/@mersennefan/citizen-lobbyists-flood-capitol-hill-to-combat-climate-change-49d5a75c9e6c#.tbj57nwey): <https://medium.com/@mersennefan/citizen-lobbyists-flood-capitol-hill-to-combat-climate-change-49d5a75c9e6c#.tbj57nwey>.

[350.org](#) was founded by environmental journalist Bill McKibben, author of [The End of Nature](#) in 1989. Started in 2008, by a group of university friends in the U.S. along with McKibben, the organization's name comes from a best estimate by climate scientists of what the carbon dioxide content of the atmosphere must be reduced to, in parts per million (from the greater than 400 ppm current level), in order to restore the climate to what it was around the beginning of the industrial revolution when the global rise in CO<sub>2</sub> emissions from burning carbonaceous fuels began. 350.org is building a global grassroots climate movement to hold world leaders accountable to the realities of science and the principles of justice by creating solutions to ensure a better future for all.

The [Union of Concerned Scientists](#) was founded during the Vietnam war to protest US government militarization of science, mainly nuclear proliferation and energy issues. Over time it shifted its focus to sustainability, but today most of its advocacy focuses on climate change. It is responsible for groundbreaking research on sustainability standards for vehicles and the other disastrous effects of climate change. Its web site says, "Since its beginnings, UCS has followed the example set by scientists: We share information, seek the truth, and let our findings guide our conclusions." Joined with other groups such as the [Yale Project on Climate Change Communication](#), UCS has been integral in refuting claims that climate change is a hoax.

[The Climate Reality Project](#) was founded in 2006 by Nobel Laureate and former U.S. Vice President Al Gore, who released the Academy Award-winning film *An Inconvenient Truth* earlier that year. It's purpose was to take the conversation forward and turn awareness into action. The mission is to catalyze a global solution to the climate crisis by making urgent action a necessity across every level of society. Reaching net zero carbon emissions is the key to the collective prosperity and well-being for all – by taking a huge step closer if we all work together.

The [Sierra Club](#) was founded in 1892 by John Muir, mostly made up of scientists interested in exploring the Sierra mountains, promoting appreciation and stewardship of the outdoors. Today the club boasts 2.4 million members and supporters. It has prominent programs fighting climate change, including a [variety of programs](#) on fossil fuels regulations and practices, carbon markets, energy economics, renewable energy, and promoting the transition away from fossil fuels to clean, renewable ones, among others.

[Greenpeace](#) was founded in 1971 to oppose nuclear testing. It's priority has shifted from nuclear proliferation to confronting climate change, mainly focusing on direct action with an international focus. Currently it is addressing Exxon's climate-denying stance, claiming it uses its profits to block climate action. The organization believes in the public's right to know what's happening to the planet, using investigators to expose environmental crimes and the people, companies, and governments that need to be held responsible. It is promoting a renewable energy revolution to win the fight against climate change.

[Post Carbon Institute](#) Founded in 2003, Post Carbon Institute's mission is to lead the transition to a more resilient, equitable, and sustainable world by providing individuals and communities with the resources needed to understand and respond to the interrelated ecological, economic, energy, and equity crises of the 21st century. Bill McKibben has said that PCI is doing the most important work imaginable, and doing it well.

[Citizens' Climate Lobby](#) was founded to take action toward creating the political will for climate solutions by enabling the exercise of political power by individual citizens, using a very compelling strategy. I think this organization's approach has the best chance to work, so joined it in the Spring of 2016, attended its orientation and training sessions and began writing letters to the editor and opinion pieces on the subject. CCL was started in 2007 by Michael Saunders when he became alarmed about the changing climate and incensed when Congress extended a law that gave \$18 billion in subsidies to oil and coal companies. He felt that Congress was doing things exactly backwards, because it is dominated by special interests, including those with deep pockets, especially the fossil fuel industry.

Saunders noticed that ordinary people were not asking their members of Congress for anything about climate change, at least not in an organized, effective way. And they didn't know what to do or how to go about it. Plus many lacked the self-confidence and support from others needed to be successful. CCL's purpose became simply to change all that, with an outrageously simple, but, we hope, successful plan.

This plan is the main thing, as I'll describe shortly, but CCL is putting together a growing cadre of organized and committed individuals and groups around the country to pursue it in an entirely non-partisan, non-political way, by informing and lobbying members of congress and their staffs on behalf of the plan, while also informing the public and enlisting their support in executing it.



Credit: Votesolar.org

**The CCL Plan.** It's a remarkably straightforward approach that is described in these two simple points.

- Empower thousands to millions of citizens to connect with and influence their members of Congress
- Purpose: Pass appropriate legislation to require and implement a Carbon Fee and Dividend program, designed to bridge any partisan divides

The carbon fee collects a steadily rising tax on fossil fuels as they are brought into the U.S. economy. The fees will be made to increase on a carefully programmed schedule, to enable corporations to plan for fee impacts. One hundred percent of the funds collected from these fees (less modest administrative costs) will be given back to each household monthly, through existing agencies of the government, only a small portion of their operations to be paid for out of fee collections. The increasing fees will shift the economics of continuing to sell fossil fuels for combustion, hopefully driving energy investors to clean, renewable energy sources such as wind, solar, biofuels, and geothermal (where abundant and available).

Firms seeking to escape higher energy costs will be discouraged from relocating to non-compliant nations (“leakage”), as their products will be subject to import fees (which will be removed when those nations create their own equivalent carbon fee program).

CCL is mobilizing citizen chapters in House political districts around the country and hopes to have legislation enabling this “carbon fee and dividend” program to be passed by Congress in 2017.

**Making it Happen.** The United States has overcome difficult challenges before. Remember that we are the country that won World War II over two oceans and put men on the moon.

The current challenge, however, has its difficulties, mostly motivational. Although we have the technology, tools, and skills to prevail—it remains to be seen whether we have the collective will. Can we overcome the war on science, the narrow and closed-minded factions at both ends of the liberal-conservative spectrum, sufficiently to implement a positive carbon fee and dividend program in the U.S. quickly? To stop runaway climate change, we need to focus on one goal—replacing fossil fuels with renewables *now*.<sup>1</sup> There are no technological or economic barriers to reaching this goal, but it will require an extraordinary level of participation, commitment, and cooperation amongst all sectors of U.S. society. If the U.S. will lead, other countries will quickly follow.

Indeed, the boomer warrior [web site reports](#) that “Canada Might Provide the Spark for a Carbon Fee and Dividend.” It writes that climate scientist James Hansen “believes that Canada is well poised to become a world carbon pricing leader and that Canada might provide the spark for Carbon Fee and Dividend on a global level” which could thereafter spread around the world fairly quickly.

The Carbon Tax Center, [www.carbontax.org](http://www.carbontax.org) is keeping track of countries and provinces as they enact carbon fees or taxes. It notes that “Canada now has its [own page](#), in recognition of its several actual and proposed provincial carbon taxes. Discussed at length is the British Columbia carbon tax, befitting its status as the most comprehensive and transparent carbon tax in the Western Hemisphere, if not the world.” As of this writing, that site indicates carbon taxes have been enacted or proposed in Ireland, Australia, Chile, Sweden, and several other nations including Finland, Great Britain, and New Zealand. The [CCL approach](#) is a stunningly straightforward way to do the important political part of it.

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<sup>1</sup> If you are concerned that we will be unable to switch completely, 100%, away from fossil fuels to energy conservation and renewable energy, I have attempted to dispel that concern in these two articles: “[Yes, We Can! A Path to 100% Renewables](#)” and “[The Cost of a 100% Conversion from Fossil Fuels to Renewable Energy.](#)”