Global Warming, the Fossil Fuel Cycle and National Security

A summary of the Issues

Vote for the Environment!

By Andrew Chalnick

Overview

- All natural systems upon which people and other living things depend upon to exist have been degraded and are being degraded at an increasing rate.
- Principally due to global warming, there is a serious risk that the earth's natural systems will begin to fail during our children's lifetimes.
- This presentation focuses on how the fossil fuel cycle (the extraction, transportation, refinement and burning of oil, gas and coal) is contributing to the degradation of the earth's natural systems. Global warming is the most prominent threat. Oil spills, the destruction of wild areas for oil, gas and coal extraction, mercury pollution, ozone and particulate matter pollution are also of serious concern.
- There is nothing more important than the long term health of the ecosystems we and other living things depend on and we have delayed too long in addressing the problems we face.
- Reducing America's dependence on fossil fuels is also vital to America's national security.
- A sizeable phased in tax on the carbon content of fossil fuels would have consequences broad and swift enough to slow or reverse some of the threats to the planet's ecosystems. In conjunction with this tax, subsidies for the production of gas, oil and coal should be lifted and strong protection put in place for forests, the planet's carbon sinks.
- Political and public will is needed to enact sound environmental policy. Vote for the environment.

Global Warming

- Carbon dioxide traps heat and the amount of carbon dioxide in the atmosphere has risen by over 50% from pre-industrial times
- The current carbon dioxide concentration stands at 380 parts per million, already the highest levels likely to have been experienced on Earth for 740,000 years.[1]
- With immediate global action – which mean reducing C02 emissions by 80% by 2050 - carbon dioxide levels could be limited to 450 parts per million, roughly double those of the Industrial Revolution.
- At 450 parts per million climate models indicate that there is a 50% percent chance that average global temperatures will rise no more than 4 degrees Fahrenheit[2]
  - Over the past century the earth has only warmed only about 1 degree Fahrenheit
  - During the last ice age (when NY was covered in one mile of ice), global temperatures were 9 degrees cooler than today
- Without prompt and sustained global action carbon dioxide levels will rise to many more parts per million and even larger temperature increases
- Most scientists believe that further increases in CO2 concentrations will likely put planetary eco-systems beyond a breaking point
- The Kyoto Protocols, signed in 1997 and set to expire in 2012, aimed at a concentration of 450 parts per million.

I read that Global Warming is a Hoax!

The Intergovernmental Panel on Climate Change (IPCC) concluded in February of 2007 that:

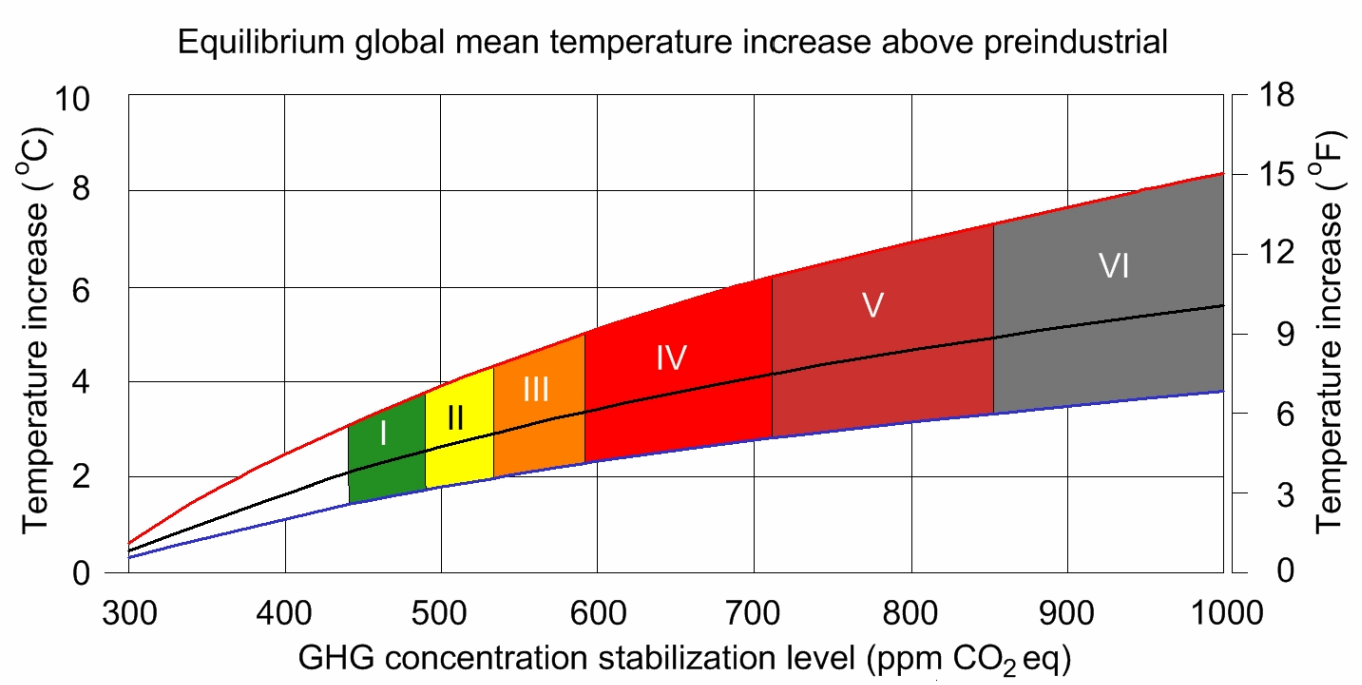
- **"Warming of the climate system is unequivocal**, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea levels."
- "Most of the observed increase in global average temperatures since the mid-20th century is **very likely** (> 90% probability) due to the observed increase in anthropogenic greenhouse gas concentrations"
- "Anthropogenic warming and sea level rise will continue for centuries due to the time scales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized."

What is the IPCC?

- The IPCC is the recognized definitive scientific organization studying climate change. The 2007 IPCC report was the culmination of over five years of collaborative efforts of over 2500 scientists from 130 countries, including the United States. Each scientist was nominated by governments and international organizations and selected for a specific task according to expertise. The scientists come from universities, research centers, business and environmental associations and other organizations from each of the participating countries.
- Anyone concerned about the future of life on earth should read the IPCC reports.[3]
- No reputable scientist refutes the conclusions of the IPCC reports. The debate is over.

Equilibrium Temperature Increases Based on Different Greenhouse Gas Emissions Scenarios

(Source : Intergovernmental Panel on Climate Change 2007)



- Approaching equilibrium can take several centuries, especially for scenarios with higher levels of stabilization. But the models project that about 65-70% of the estimated global equilibrium temperature increase would be realized at the time of stabilization. For category I and II the equilibrium temperature will likely be reached earlier.

- Change in Global CO2 emissions by 2050 (as % of 2000 levels):

  - Category I: 60% to 85% reduction
  - Category II: 30%to 60% reduction
  - Category III: 5% increase to 30% reduction
  - Category IV: 10% to 60% increase
  - Category V: 25% to 85% increase
  - Category VI: 90% to 140% increase

- CO2 emissions increased 80% between 1970 and 2004.

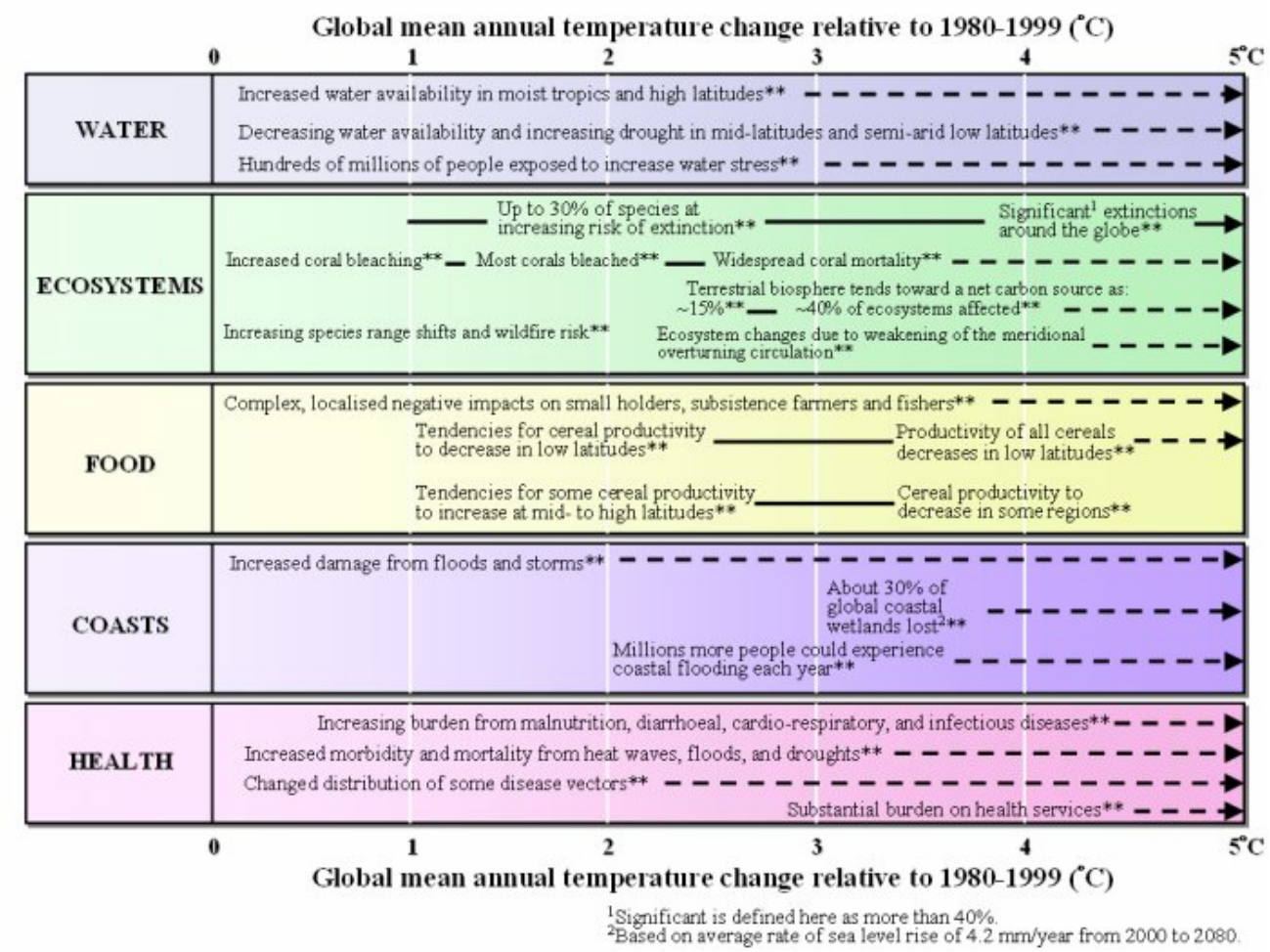
Global Warming Consequences

In the life time of our children (or our children's children) without immediate action the scientific consensus is that we can expect:

- Mass extinctions in plant and animal species unable to adapt to rapid climate change[4] (large scale irreversible coral bleaching has already occurred[5])
    - past, gradual warming allowed some animal species to migrate to hospitable environments. The rapidity of the currently forecasted warming, coupled with the isolation of wild species to islands of wilderness, will significantly increase extinctions
- The Arctic will in the coming decades be free of ice in the summer (summer sea ice in the Arctic had already shrunk 40% from pre-industrial levels by the summer of 2006)[6]
- Coastal plains to be flooded (if Greenland melts half of Florida will be under water)[7]
- Mass refugee problems from increasingly intense weather, both storms and drought[8]
- Tropical diseases in what are now northern climates[9]
- Absorption of carbon by the oceans and resultant changes in ocean chemistry (carbonic acid) that will threaten food chains that marine life depends on[10]
- A different planet
- Forget about your ski vacations in Vermont (or Aspen)[11]!

Global Warming Consequences –

Key Impacts as a Function of Increasing Global Average Temperature Change



The black lines link impacts, dotted arrows indicate impacts continuing with increasing temperature. Entries are placed so that the left hand side of text indicates approximate onset of a given impact. (Source : Intergovernmental Panel on Climate Change 2007)

OK – but what else about the fossil fuel cycle should I be concerned about?

Well, if that's not enough:

- Oil spills, aka, Exxon Valdez and the recent pipeline gush in Alaska
    - Over 250,000 gallons of crude spilled into an area near ANWR in March through a leaky pipe
    - The Galapagos islands, the Spanish coast and many other areas have been significantly degraded by oil spills

- Natural areas must be sacrificed for natural gas wells and oil drilling – eg., the ANWR
    - At peak production -- in 2020 or 2025 -- the ANWR would supply less than 4% of the country's projected daily needs.

- Mountaintop removal coal mining[12]
    - Mountaintop mining is a form of strip mining where trees and all other vegetation is removed from a mountain top, the mountain top is blownup, removed and dumped into nearby streams and valleys and seams of coal from the exposed earth are removed.[13]
    - Is this is what to become of once "purple mountains" and "fruited plains"?
    - Is this what is meant by "cheap" coal?

OK – but what else about the fossil fuel cycle should I be concerned about?

- Mercury emissions from coal and oil refineries
    - Power plants burning coal are the greatest single source of mercury pollution. Mercury in coal is released into the atmosphere and carried to the ground by rain. The mercury then accumulates in soils and aquatic sediments, where bacteria convert it to methylmercury, a form of the metal that is readily absorbed by small animals such as oysters. From there, mercury biomagnifies, working its way up the food chain. Big predators like sharks, swordfish and large tuna end up with extremely elevated levels of mercury.
    - Coal-fired power plants pump out about 48 tons of mercury annually.[14]
    - It is ill-advised today to eat tilefish, shark, swordfish, king and spanish mackerel, Chilean bass, halibut, and tuna because of mercury levels[15]
    - Pregnant women are advised not to eat a single can of tunafish
    - Pregnant whales and other sea mammals cannot avoid mercury poisoning

- Boreal forests that are the “lungs” of the planet are being razed to extract oil from “oil sands”

- Ozone and particulate matter pollution (mostly from coal burning power plants) leads to asthma and other health risks in cities and suburbs

Even if you don't care about the environment …

- High oil prices are making Middle Eastern countries incredibly wealthy.
- That wealth is funding the militant islamists
  - If fossil fuel were more expensive, less would be used and the price would come down
  - Oil producing nations would sell less oil and would receive less for each barrel of oil sold
- If the Corporate Average Fuel Economy (CAFÉ) standard for cars and light trucks were increased to 40 miles per gallon the US could end its dependence on Persian Gulf oil[16]

But why do anything now? Who knows what will happen?

- If you go to a doctor and s/he tells you that you have a very good chance of dying but a very good chance of getting better with medicine is your reply that you'll wait until s/he is more certain of his conclusion?
- The worst that will happen if we address these issues now is our children will inherit a cleaner and safer planet
- What will you say to the next generation when all of this comes to pass and they want to know what you did?

OK. But why me, why us – shouldn't we wait for China and India?

- America emits 25% of the world's carbon dioxide and the average American emits in one day what the rest of the world's citizens emit in a week
- American cars produce nearly **half** the carbon dioxide pumped out of exhaust pipes into the entire planet's atmosphere each year - SUVs and Hummers are to blame[17]
- America needs to show leadership.
  - Technologies we develop can be sold to developing nations and lead our economy into the 21st century
  - We have a moral obligation to address these issues
  - Many other countries are ahead of us
  - Without US participation there's little hope of securing China's cooperation
- The US is obstructing efforts today
  - The Kyoto treaty took effect on February 16, 2005
  - The Kyoto treaty has been ratified by over 160 nations
  - The United States is the **only** developed nation that has not ratified the treaty
  - Signatories are legally committed to meeting emissions targets by 2012.

Religion and the Environment

- When God created Adam He showed him all the trees in the Garden of Eden and said: "**See how beautiful and perfect are My works! All that I have created, I have created for you. Therefore, be ever mindful: Do not abuse or desolate My world. For if you abuse or desolate it, there is no one to repair it after you.**"[18]

- In Judaism, the halakhah (Jewish law) prohibits wasteful consumption. When we waste resources we are violating the mitzvah (commandment) of *Bal Tashhit* ("Do not destroy"). It is based on Deuteronomy 20:19-20:

  "When in your war against a city you have to besiege it a long time in order to capture it, you must not destroy its trees, wielding the ax against them. You may eat of them, but you must not cut them down. Are trees of the field human to withdraw before you into the besieged city? Only trees that you know do no yield food may be destroyed; you may cut them down for constructing siegeworks against the city that is waging war on you, until it has been reduced."[19]

- The Torah recognizes that every species has an inherent value beyond its instrumental or useful value to human beings. The Torah says "**If along the road, you chance upon a bird's nest, in any tree or on the ground, with fledglings or eggs and the mother sitting over the fledglings or on the eggs, do not take the mother with her young. Let the mother go, and take only the young, in order that you may fare well and have a long life.**"[20]

  - Related to this idea is the concept of *Tzar Baalei Chayyim*, the prohibition of hurting animals without good purpose (based on Deut. 22:6, 22:10, 25:4, Numbers 22:32, Exodus 20:8-10, Lev. 22:27-8). These concepts bring to our relationships with the non-human world limits and controls over our power and greed.

- The sages understood that we do not know God's purpose for every creature and that we should not regard any of them as superfluous. They said:

  "Even those things that you may regard as completely superfluous to Creation - such as fleas, gnats and flies–even they were included in Creation; and God's purpose is carried through everything–even through a snake, a scorpion, a gnat, a frog."[21]

OK – I'm listening. What can I do?

- Support representatives that believe that the use of fossil fuel needs to be significantly curtailed and that are willing to act on that belief
    - Convince your friends, family and neighbors to support the same representatives
- Use less stuff, re-use the stuff you do use (cloth shopping bags, rechargeable batteries), recycle as much as you can, use recycled products (recycled paper, paper towels) as much as you can, buy and drive cars no bigger than you really need, use compact fluorescents (and save money in the long run) and natural light
    - Everything we use requires energy to make
    - Using more recycled paper means more forests absorbing more CO2
    - Sign up with catalogchoice.org to opt out of unwanted paper catalogs
- In New Jersey you can choose to buy electricity produced by renewable sources[22] and can receive rebates on the installation of solar panels, heat pumpts and other energy-efficient upgrades to your home.[23]
- Volunteer to participate in an effort to make Millburn (or your hometown) a "cool city"[24]
    - Sponsored by the Sierra Club, "cool cities" are those locales that have made a commitment to curb global warming
- Take your children hiking and camping. If your children do not love nature they won't realize that they need to protect it.[25]
- Donate to environmental organizations
- Buy carbon offsets – Terrapass.com sells them
- See endnotes for papers giving other detailed tips on what you can personally do[26]

Cool Cities Campaign

- Mayor Signs on to the "U.S. Mayor's Climate Protection Agreement"
  - Millburn pledges to reduce total C02 emissions by 7% below 1990 levels by 2012
  - Town Council adopts resolutions supporting the pledge
- Community Buy-In
  - Leaders from civic groups, schools, houses of worship and businesses are contacted and engaged
    - Maplewood sent notices to the entire town
  - Cool City Committee is Formed
- Inventory of Existing Energy Use is Conducted
  - Gather data on total electricity, natural gas, oil, vehicle use, recycling, etc…
- Climate Action Plan is Adopted
  - Parking discounts for SULEV hybrids
  - Property tax exemption for incremental value due to heat pump or solar panels
  - More sidewalks and bikepaths
    - Federal money is available through TEA 21
  - LED traffic signals
  - Encourage and enforce recycling
  - Encourage use of recycled products
  - Encourage enrollment in Clean Power Choice
  - Encourage use of Energy Efficient Bulbs in Households
  - Town Environmental Fair (like Maplewood and Livingston)
  - Encourage opt-out of unwanted paper catalogs
  - Organize viewings of "Kilowatt Ours", "Inconvenient Truth", Etc…
- Administration, Monitoring and Reporting on Climate Action Plan Progress
- Livingston, West Orange, South Orange, Summit and MapleWood have signed the agreement

Is this a partisan, political issue?

It doesn't have to be. It shouldn't be. But, today in the USA, except for a handful of politicians from both parties, it unfortunately is …

- In February 2007 National Journal released a "Congressional Insiders Poll," which surveyed 113 members of Congress – 10 Senate Democrats, 48 House Democrats, 10 Senate Republicans, and 45 House Republicans – about their positions on global warming[27]
- Only 13 percent of congressional Republicans say they believe that human activity is causing global warming, compared to 95 percent of congressional Democrats. Moreover, the number of Republicans who believe in human-induced global warming has actually *dropped* since April 2006, when the number was 23 percent.

Example Executive Actions

December 29, 2007: The EPA rejects California's proposed auto emissions waiver which would have set stricter vehicle emissions standards than federal law requires as part of the state's efforts to fight climate change. Twelve other states – Connecticut, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont and Washington – have adopted the California emissions standards, and the governors of Arizona, Colorado, Florida and Utah have said they planned to do so. Gov. Arnold Schwarzenegger of California and the attorney general, Edmund G. Brown Jr., said that they were prepared to "sue at the earlier possible moment" to try to force the EPA to allow the state to set emissions standards.

December 15, 2007: The U.S. obstructs efforts at the United Nations Climate Change Conference in Bali, Indonesia to reach a new

agreement on Global Warming following expiration of Kyoto in 2012. The European Union, and other developing nations, offered a "road map" that called for industrialized nations to cut emissions by 25 to 40 percent by 2020. The U.S. delegation was booed for a full minute by the full assembly after rejecting this proposal. U.S. finally agrees to a much watered down agreement which contains no binding commitments.

September 5, 2007: Bush administration proposes rules to relax the regulations governing mountaintop removal coal mining by exempting mining companies from a 1983 rule which prohibits mining within 100 feet of a streambed.[28]

June 7, 2007: White House objects to and derails plan proposed by Germany at Group of 8 meeting to cut CO2 emissions in half by 2050.

Summer 2007: The Bush administration eliminates NASA's budget earmarked for satellites to study climate change. "The loss of climate sensors places the overall climate program in serious jeopardy" write NOAA and NASA scientists in a report to the White House.

July 24, 2006: NASA eliminates the promise "to understand and protect our home planet" from its mission statement. That statement was repeatedly cited last winter by NASA climate scientist James Hansen, who said he was being threatened by political appointees for speaking about the dangers posed by greenhouse gas emissions. A NASA spokesman said the change brings the agency into line with U.S. President George W. Bush's goal of pursuing human spaceflight to the moon and Mars. Hansen says the elimination of the phrase involving protecting the planet might reflect a White House desire to shift the spotlight away from global warming saying "They're making it clear that they ... prefer that NASA work on something that's not causing them a problem."[29]

March 2006: At an international climate forum in Montreal the US argued that voluntary measures and "more study" are all that are needed to address global warming. The US and Australia were the only industrialized countries at the forum not to agree to cuts in global warming emissions.[30]

March 15, 2006: The Bush administration moves ahead with a huge timber sale that will devastate some of the last remaining wild forests of Alaska's Kuiu Island, in the Tongass National Forest.

December 10, 2005: At the end of the first Meeting of Parties to the Kyoto Protocol in Montreal industrial nations other than the United States and Australia agree to negotiate deeper cuts in their emissions of heat-trapping gases that are causing global warming. "The Bush administration clearly came here determined to prevent the rest of the world from extending and deepening their commitments under Kyoto," said Alden Meyer, director of strategy and policy for the Union of Concerned Scientists (UCS). "But their strategy failed, as Europe, Canada, Russia, and Japan decided to move forward without the United States. These nations understand that mandatory limits on global warming pollution, combined with market-based emissions trading mechanisms, are essential in mobilizing the private sector technology and capital needed to effectively confront the urgent threat of global warming."[31]

December 2005: The Bush administration is relying on voluntary policies to reduce global warming emissions and relied on data reportedly showing a reduction in rejecting calls for international cooperation. But, a department of energy study in December of 2005 shows that in 2004 global warming pollution emitted in the United States reached the highest level ever recorded.[32]

February 6, 2006: Bush administration opens Teshekpuk Lake - a vast, roadless region of Arctic Alaska - to oil drilling Wednesday over the bitter objections of environmentalists. The decision reverses a Reagan-era decision to keep hundreds of thousands of sensitive acres around Teshekpuk Lake, on Alaska's North Slope, off-limits to oil.[33]

June 18, 2005: Philip A. Cooney – former White House Chief of Staff in Environmental Quality and former lobbyist at the American Petroleum Institute – is discovered to have edited scientific reports of the government's office for "Climate Change Science" (the USGCRP") so as

to produce doubt about findings that were considered scientifically robust. Mr. Cooney is a lawyer with a bachelor's degree in economics and has no scientific training. The official has subsequently resigned and joined Exxon. Below is a before and after of just one of the sentences (additions in italics):[34]

Before:

The challenge for the USGCRP is to provide the best possible scientific basis for documenting, diagnosing, and projecting changes in the earth's life-support systems, and the role for CCRI is to facilitate full use of this scientific information in policy and decision making on response strategies for adaptation and mitigation at the international, national and regional scales.

After:

The challenge for the USGCRP is to provide the best possible scientific basis for documenting, ~~diagnosing~~ *understanding* and projecting changes in the Earth's life-support systems, and the role for CCRI is to *reduce the significant remaining uncertainties associated with human-induced climate change and* facilitate full use of ~~this~~ scientific information in policy and decision making on *possible* response strategies for adaptation and migration ~~at the international, national and regional scales~~.

September 28, 2005: Interior Secretary Gale Norton says the Bush administration will intensify its efforts to expand energy development on public lands including the ANWR and the nation's coastal waters.

March 15, 2005: Bush administration reverses Clinton administration order under the Clean Air Act that would have mandated reducing the amount of mercury produced by coal-fired power plants by as much as 90%, to about 5 tons annually by 2008. Bush rule calls for a national cap of 34 tons in 2010. EPA models suggest that a 70% reduction may not be reached until 2025, if ever.[35]

February 16, 2005: Kyoto protocol takes effect without the U.S.

2004: Administration approves more than 6000 permits to drill for oil and gas on Western lands, a one-year record.

December 23, 2004: The Bush Administration issues broad rules relaxing longstanding provisions on environmental reviews and the protection of wildlife on 191 million acres of national forest, including repeal of the "Roadless Rule" (The Roadless Rule is an administrative rule that was issued by the U.S. Forest Service in January 2001 to protect the last remaining wildlands in our national forest system. It places about one-third of the national forest system's total acreage off-limits to virtually all road building and logging. More than half of our national forest land is already open to such activity.)[36]

May 15, 2003: President Bush nominates William Myers to the 9th Circuit Court of Appeals. Nomination is opposed by all major environmental groups. Patrick Leahy calls him "the most anti-environmental nominee I have ever seen in my years in the Senate".[37]

October 27, 2001: Bush administration issues new regulations which strip the authority of federal regulators to veto mining activity that would cause "substantial irreparable harm" to the environment.[38]

July 23, 2001: Bush administration releases plan to cut federal environmental enforcement operations and shift enforcement to the states despite analysis by EPA's inspector general that documents widespread lapses in the state enforcement of federal environmental laws.

Example Legislative Actions

December 13, 2007: Senate Republicans block energy bill (vote 59 in favor, 40 against (1 democrat against)) which would have eliminated $13.5 billion in tax breaks provided to the oil companies by Congress in 2004 and 2005.

December 10, 2007: Senate Republicans block energy bill (vote 53 in favor, 47 against) which would have required electric utilities to get 15

percent of their power from renewable sources (like wind and solar) by 2020.

August 4, 2007: House passes bill by a vote of 241-172 (215 Democrats for, 163 Republicans against) to expand the use of renewable energy, set new efficiency standards for a variety of appliances, ensure environmental standards are satisfied when public lands are developed for oil shale and tar sands and require private electric utilities to generate 15% of their power with renewable sources and efficiency measures by 2020. Companion bill provides tax incentives to encourage renewable energy production and conservation and removes a number of roadblocks to renewable energy production. Bill is funded largely by revocation of some federal oil and gas subsidies. Bush threatens a veto.

June 29, 2006: House lawmakers approve legislation that would expand drilling for oil and natural gas off most of the U.S. coast and Alaska. Bill would end a ban on new domestic offshore drilling that for 25 years confined such activity almost exclusively to the western and central Gulf of Mexico. Bill passes 232-187 vote, opposed mostly by democrats.

May 30, 2006: The House votes 225-201, mostly along party lines, to open the Arctic Refuge to oil drilling.

July 22, 2006: Senate Republicans agree on legislation to open eight million acres of the gulf to new oil and gas drilling, potentially ending a 25 year moratorium on oil leases on the outer continental shelf. The legislation contains no energy conservation measures.[39]

July 26, 2005: House Republicans strip from energy legislation a provision to require 10 percent of U.S. electricity to come from renewable resources by 2020. 82 percent of Republicans vote to strip provision; 93 percent of Democrats vote to retain it.[40]

June 15, 2005: Senate Democrats introduce legislation that would require a 40 percent reduction in the nation's reliance on imported oil by 2025. Bush administration reacts "it is not convinced of the need for any climate change provisions and would oppose a plan to require utilities to increase their use of renewable fuels." 95 percent of Republicans vote against; 98 percent of Democrats vote in favor.[41]

When the House voted on a provision to raise the fuel efficiency standard for new cars from the current 27.5 miles, to 35 miles per gallon by 2015, 84 percent of Republicans voted against; 70 percent of Democrats voted in favor.

March 17, 2005: Nomination of William Meyers to the 9th Circuit Court of appeals is successfully filibustered in the Senate by the democrats.

March 15, 2005: Senate includes provision to open ANWR in budget resolution which cannot be filibustered.

The Judiciary

April 2, 2007: Supreme Court rules 5-4 (Justice Stevens, joined by Justices Anthony M. Kennedy, David H. Souter, Ruth Bader Ginsburg and Stephen G. Breyer in the majority) that the Environmental Protection Agency has the authority to regulate heat-trapping gases in automobile emissions and cannot sidestep its authority to regulate the greenhouse gases that contribute to global climate change unless it can provide a scientific basis for its refusal. Bush administration had maintained that it does not have the right to regulate carbon dioxide and other greenhouse gases under the Clean Air Act, and even if it did, it would not use the authority.

What should Government do?

- Protect our forest through legislation, regulations and administrations
  - Support the “Roadless Rule”
- End oil, gas and coal subsidies
- Support **taxes** on the carbon content of fossil fuels

Focus on Forests[42]

- Nearly half of the planet's original forest cover is gone today. Forests have effectively disappeared in 25 countries, and another 29 have lost more than 90% of their forest cover.

- As a tree grows, it absorbs CO2 from the air and, through the process of photosynthesis, uses solar energy to store carbon in its roots, stems, branches, and foliage. Some carbon is released back into the atmosphere as CO2 during respiration, but a living tree acts as a carbon "sink"–storing more carbon than it releases. Trees continue to accumulate carbon until even after they reach maturity through the carbon stored in fallen leaves, twigs and buried roots that can bind to soil particles.

- The global clearing and degradation of forests accounts for approximately 20 percent of annual CO2 emissions worldwide. This is more than the annual CO2 emissions generated in the United States by burning fossil fuels.

- Recent estimates show that U.S. forests, grasslands, and agricultural lands form a sizable carbon sink. Even a forest that undergoes regular harvesting can act as a carbon sink as long as yearly growth exceeds the amount of carbon removed during harvest. The U.S. carbon sink absorbs 1.1 to 2.6 million metric tons of CO2 each year, which is equivalent to 20 to 46 percent of total U.S. global warming emissions.

- Carbon sequestration by forests and other lands decreased by approximately 20 percent from 1990 to 2001, a decline stemming primarily from unsustainable timber management (especially on privately owned forests) and the clearing of forests for development.

- Since carbon sequestration can usually be accomplished through established sustainable forest management practices, biodiversity and ecosystem health would be maintained as well.

Focus on Oil, Gas and Coal Subsidies

- The US oil and gas industry will receive more than $31.6 billion direct subsidies from the federal government over the next five years:[43]

Tax breaks[44]	$20.3 billion
Royalty relief	$9.5 billion
Research and development subsidies	$1.8 billion
Total	$31.6 billion

- US Defense Department spending allocated to safeguard the world's petroleum resources is estimated at $47.6 to $113 billion per year (in 2003 dollars).[45]

- The Strategic Petroleum Reserve, a federal government entity designed to supplement regular oil supplies in the event of disruptions due to military conflict or natural disaster, costs taxpayers an additional $950 million to $1.135 billion (in 2003 dollars).

- The Coast Guard and the Department of Transportation's Maritime Administration provide other oil protection services totaling $635.2 million per year (in 2003 dollars).

- The coal industry will receive $8.68 billion in subsidies between 2003 and 2013.[46]

Focus on Carbon Taxes

- Currently, the prices of gasoline, electricity and fuels in general include none of the costs associated with the devastating environmental impacts of fossil fuels

- This omission suppresses incentives to develop and deploy carbon-reducing measures such as energy efficiency (e.g., high-mileage cars and high-efficiency heaters and air conditioners), renewable energy (e.g., wind turbines, solar panels), low-carbon fuels (e.g., biofuels from high-cellulose plants), and conservation-based behavior such as bicycling, recycling and overall mindfulness toward energy consumption.

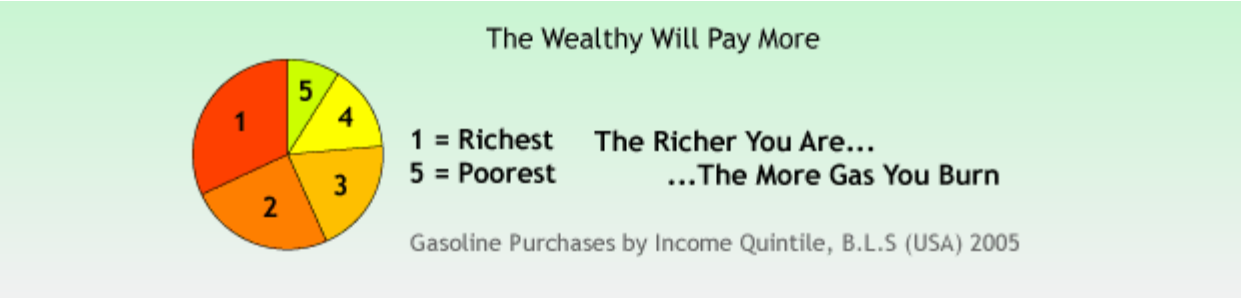
- Conversely, taxing fuels according to their carbon content will infuse these incentives at every chain of decision and action – from individuals' choices and uses of vehicles, appliances, and housing, to businesses' choices of new product design, capital investment and facilities location, and governments' choices in regulatory policy, land use and taxation.

- The carbon content of every form of fossil fuel, from anthracite to lignite coal, from residual oil to natural gas, is precisely known. So is the amount of CO_2 released into the atmosphere when the fuel is burned. A carbon tax thus presents few if any problems of documentation or measurement. Administering a carbon tax would be simple; utilizing existing tax collection mechanisms, the tax would be paid far "upstream" (e.g., at the point where fuels are extracted from the Earth and put into the stream of commerce, or imported into the U.S.). Fuel suppliers and processors would pass along the cost of the tax to the extent that market conditions allow.

- Carbontax.org is an excellent website that discusses the concepts behind a carbon tax in great detail

What will happen to the tax revenues? Isn't this just more "big government"?

- The tax should be revenue neutral
  - Revenues should be refunded back to the American people in roughly equal amounts to each taxpayer
  - Social security offsets and/or adjustments to marginal individual an corporate tax rates could be used
  - Since the less wealthy tend to use less energy the tax coupled with the refund would be progressive



The pie charts for electricity, jet fuel, etc. are similar, meaning that carbon taxing can be made "income-progressive" via *pro rata* revenue distribution.

- Government's role should be to ensure that free markets truly reflect the costs of its inputs.
  - The cost to extract and transport fossil fuel vastly underestimates the cost of fossil fuel to society.

- In April 2007, Ways and Means Committee member Fortney Pete Stark, D-Calif., introduced H.R. 2069, the Save Our Climate Act of 2007, which would impose a carbon tax equal to $10/ton of carbon content, increasing at $10/ton annually, until total U.S. emissions are reduced by 20%

- In October 2007, Congressman John Dingell, D-Mich., introduced a bill which would impose a carbon tax equal to $50/ton of carbon content, and a surtax of $0.50 per gallon of gasoline

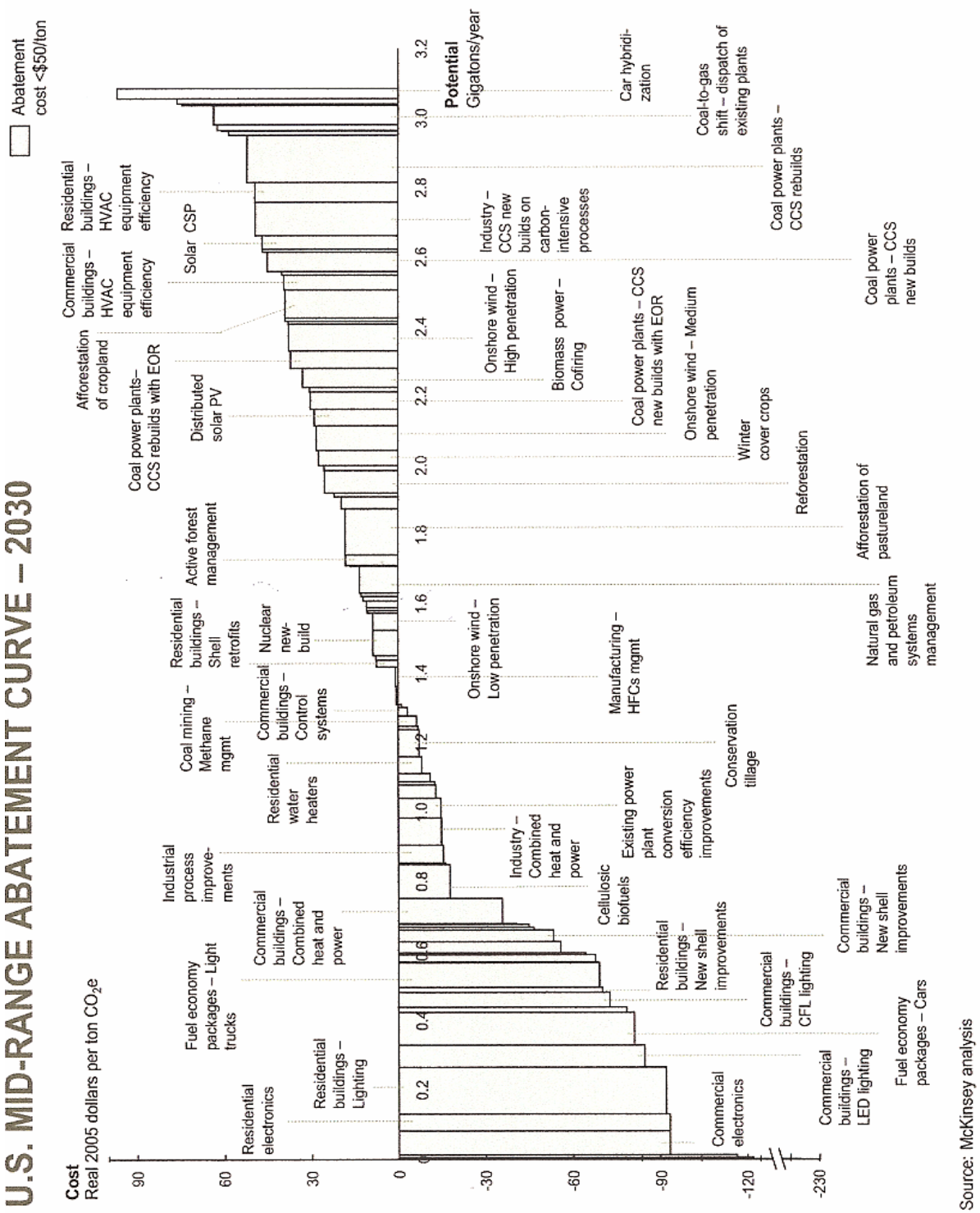
What are others doing?

- **Sweden** taxes carbon at $150 per ton of CO_2 released,[47] **Finland** at $24 per ton.[48] The **Netherlands, Denmark, Holland, New Zealand, Canada** and **Norway** all also have carbon taxes.[49]
- In February 2005 **China** passed legislation requiring provinces to purchase electricity generated from renewable sources even if the price is higher than traditional sources.[50]
- **Great Britain** introduced a "climate change levy" in 2001 on the use of energy in the industry, commerce and public sectors. Revenues are used to provide offsetting cuts in employers' National Insurance Contributions and to provide support for energy efficiency and renewable energy; the Department of Environment, Food and Rural Affairs (DEFRA) states that the levy "entails on increase in the tax burden on industry as a whole and no net gain for the public finances." Rates are 0.15p/kWh for gas ($0.003) , 0.07p/kWh for liquid petroleum gas ($0.0014), 0.44/kWh ($0.0087) for electricity and 0.12p ($0.0024) for any other taxable commodity (using the August 17, 2007 exchange rate of USD 1.00= GBP 0.503).[51]
- **Boulder (Colorado)** implemented the United States' first tax on carbon emissions from electricity, on April 1, 2007. The tax is approximately equivalent to $7 per ton of carbon and will cost the average household about $1.33 per month. Households that use renewable energy receive an off-setting discount. The City of Boulder expects the tax to generate about $1 million annually until it expires in 2012. The revenues will be used to fund Boulder's climate action plan to further reduce energy use and to comply with the Kyoto Protocol.[52]

Will Expensive Fossil Fuels Make America Less Competitive?

- Other countries have a mutually keen interest in freeing themselves from oil dependency and in preventing environmental catastrophe
- America should lead the world while at the same time entreating the international community to join in taxing and disincenting fossil fuels
  - o Many others are already doing just that
  - o The US is obstructing efforts today
- Leading in clean technologies will make America stronger
  - o GM and Ford have lost substantial market share to Toyota and Honda
  - o China's fuel economy standards are so strict that US automakers can't sell most makes of cars in China[53]
- Even if the economy tanks, in fifty years we may long for the days when all we had to worry about was a weak economy

And many steps that we can take right now with existing technology to reduce our carbon footprint and use of fossil fuels are cost negative …



Closing Thought

I read that a frog, if dropped if boiling water, will quickly jump out unharmed. The same frog, if placed in water which is slowly brought to a boil will stay in place and die.[1]

[1] In fact, in an experiment with 100 frogs, only one jumped out as the water began to really heat up. In a post-experiment interview the lucky frog explained that it had just watched a screening of "An Inconvenient Truth".

Endnotes

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