

## Testimony of Former U.S. Senator Timothy E. Wirth

### Subcommittee on Environment U.S. House Committee on Oversight and Reform April 9, 2019

Mr. Chairman, thank you for inviting me to discuss the history of the climate issue in the United States and around the world. In my testimony, I will provide a brief review of some of the key milestones in the U.S. government's response efforts, insights into why our response has been insufficient, and recommendations for the future.

I believe I have something of a unique perspective on this history because my career inside and outside of government has been framed and shaped by the climate issue.

I was a White House fellow during the Johnson Administration, when concern about local, national and global environmental issues emerged as a matter of government priority and attention. As documented in a comprehensive history of U.S. government response to the climate issue by James Gustave Speth, a former Chair of the White House Council on Environmental Quality, 1965 was a special milestone. Late in that year, the White House issued an important report entitled "Restoring the Quality of Our Environment," which indicated that rising carbon dioxide levels in the atmosphere might have grave effects on humanity, including those related to ocean acidification, sea level rise and other impacts that we are, in fact, experiencing today.

Ten years later, I was a freshman member of this House and became engaged in energy and climate issues while serving on the House Commerce Committee under the chairmanship of John Dingell. Chairman Dingell gave younger members a great deal of freedom to explore emerging issues and work on legislative solutions. With the opportunity and tutelage from Chairman Dingell, for 12 years in the House I was deeply engaged in all issues related to energy, from deregulation of natural gas to the advent of auto fuel economy standards to the founding of the Solar Energy Research Institute (now the National Renewable Energy Lab) in Colorado. The overarching objective of these policy efforts was to make the U.S. energy sector cleaner, safer and more secure for the American people.

Fast forward another decade and I was a freshman member of the United States Senate, where I again was fortunate to serve under an excellent Energy Committee Chairman, Senator Bennett Johnston. It was in the mid-1980s and climate change was emerging from the laboratories and journals of science and into the hallways of Congress and public policy. Chairman Johnston asked me to take a leadership role on climate related issues as it became clear that new energy policies must be at the center of the response to scientific concern. In mid-1988, as the entire globe was gripped by drought and extreme temperatures and weather events, we organized historic hearings that featured NASA scientist Jim Hansen's first public articulation of data showing that global warming was outside the range of natural variability and on our doorstep. Man induced climate change was discernable; the news rocked public perception, appeared as the lead story in the *New York Times* for the first time, and dramatically altered the public policy debate. The Hansen hearing marked a significant watershed in both the science and public recognition of climate change.

A month later, I introduced the first comprehensive policy response legislation calling for a 20 percent cut in U.S. carbon emissions by 2000. This massive, 16-title legislation covered a broad range of issues, from reliance on natural gas as a bridge fuel, to sharply expanded renewable and energy efficiency measures to international family planning. Notably, twenty Senators, including eight Republicans, signed on to the legislation's far-reaching goals and policy proposals. Many of the policy prescriptions in that bill -- on energy efficiency, renewable energy, natural gas -- served as cornerstones of the Energy Policy Act of 1992.

By the end of the 1980s, the climate issue had emerged as a major priority for international cooperation. In 1985, the International Council of Scientific Unions, WMO and UNEP organized a major meeting in Villach, Austria. At this meeting, leading American scientists joined with those from 28 other countries to conclude that "human releases of greenhouse gases could lead in the first half of the 21<sup>st</sup> century to a rise of global temperature....greater than any in human history."

Coming out of that meeting, the international community -- again, with key leadership from leading American governmental scientists -- established in 1988 the Intergovernmental Panel on Climate Change (IPCC). The IPCC has become one of the most significant and far-reaching scientific collaborations in history and its work represents the consensus of the most authoritative researchers in the world. Representatives from 195 nations participate in the IPCC process and have produced five exhaustive assessments to inform policymakers on the science of climate change, its implications and risks, and to provide expert analysis of adaptation and mitigation options.

The first IPCC assessment was released in 1990 and it found that human activities were enhancing the Earth's natural greenhouse effect and could cause large, expensive impacts. The initial IPCC report was a spur to intergovernmental policy deliberations occurring under the auspices of the United Nations.

I was privileged, Mr. Chairman, to serve on the Senate's official oversight group for the UN Conference on Environment and Development -- the "Earth Summit" -- in Rio de Janeiro, Brazil in 1992. At the Rio Conference -- one of the largest leadership gatherings in history, with over 100 heads of state and 30,000 participants -- the U.S. agreed to the UN Framework Convention on Climate Change, which was supported by President George H.W. Bush and ratified by the Senate in 1992. The objective of that agreement was "to stabilize greenhouse gas concentrations at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system." While it did not prescribe exactly how the balance between economic development and climate protection was to be achieved, the Framework Convention is to this day the governing framework for discussions and agreements on such thorny issues as:

- The acceptable level of carbon in the atmosphere;
- The consensus on climate science;
- The relative responsibilities of rich and poor countries; and
- Agreed ways of sharing the burdens and the opportunities of the agreed imperative of the transition to renewable energy.

President Clinton invited me to join his administration when I retired from the Senate in 1992, and I served as his Undersecretary of State for Global Affairs for five years. The office had agency-wide responsibility for environment and energy issues and for much of the administration's follow-up to

the 1992 Earth Summit. I spent much of my time as Undersecretary overseeing international climate negotiations and helped lay the groundwork for the Kyoto Protocol, which was adopted by the international community in 1997.

In 1997, I resigned from the Administration when Ted Turner asked me to lead the development of his new billion-dollar foundation to help the United Nations. I was the founding President of the new United Nations Foundation, and for 15 years oversaw its work on climate, population, children's health, and women's empowerment. Among other achievements, we worked with the UN leadership to outline the basic framework for dealing with climate – mitigation, adaptation, technology and finance – and helped set the table for the successful Paris Agreement of 2015. I am currently a member of the UN Foundation Board as we work to strengthen the United Nations, with climate as our top priority.

During the important decade of the 1990s, a number of key meetings marked the history of the climate agreements, starting in Rio and progressing to the far-reaching Paris Agreement of 2015:

**The Berlin Mandate** (1995) was the first effort to implement political support for the Framework Convention and called for legally binding standards and emissions limits, which would be set by international law. Originally the Rio agreement had called for a return to 1990 levels of greenhouse gas emissions by the year 2000; it was decided in Berlin to extend the process beyond 2000.

**The Kyoto Protocol** (1997), designed to become a treaty obligation as well, attempted to codify the Rio framework of Annex 1 and non-Annex 1 countries, based on the principle of “common but differentiated responsibilities.” The 37 Annex 1 countries (developed countries) were to be obligated to specific reduction requirements, on the basis that they were historically responsible for the existing levels of greenhouse gases in the atmosphere. A variety of flexibility mechanisms – Joint Implementation, International Emissions Trading, and the Clean Development Mechanism – were designed to help countries adjust to their targets, and to work with non-Annex 1 countries, which did not have legal obligations beyond making best-faith efforts. It was also apparent that the Protocol would not be enough to stabilize the concentration of carbon in the atmosphere, and further reductions would be necessary.

The differentiation of obligations between the United States and China became the primary stumbling block to further U.S. commitments to the Framework Convention. The fossil fuel industry and significant segments of U.S. industry argued that China was rapidly becoming the largest emitter in the world, while China argued that the U.S. and other developed countries had caused most of the problem, that Chinese emissions per capita were tiny and that they needed greater flexibility in order to grow. This sharply different perspective on national obligations remained a bitter point of conflict for nearly 20 years, holding up the steady progress that had been made up until 1992. In an advisory “sense of the Senate” vote, the U.S. Senate voted 95-0 to disaffirm the Kyoto Protocol, and for many years cooperation between the world's two biggest emitters nearly slowed to a halt.

Technology development played a major role in breaking the impasse. In the United States, implementation of the Clean Air Act led to the slow but steady decline of the amount of carbon dioxide that could be emitted. The program of “tradable permits” was introduced, and the flexible emissions trading scheme adopted in the Clean Air Act Amendments of 1990, which helped to balance obligations between mostly older Eastern utilities and new Western power plants. New

mining technologies enhanced the development of cleaner Western coal, and the decline of the traditional coal industry began. Concurrently the increase in the availability of cleaner and cheaper natural gas also pressured the coal industry. Finally, the Obama Administration formulated the Clean Power Plan to further accelerate the reduction of carbon from the utility sector, and to encourage the more rapid adoption of renewable technologies.

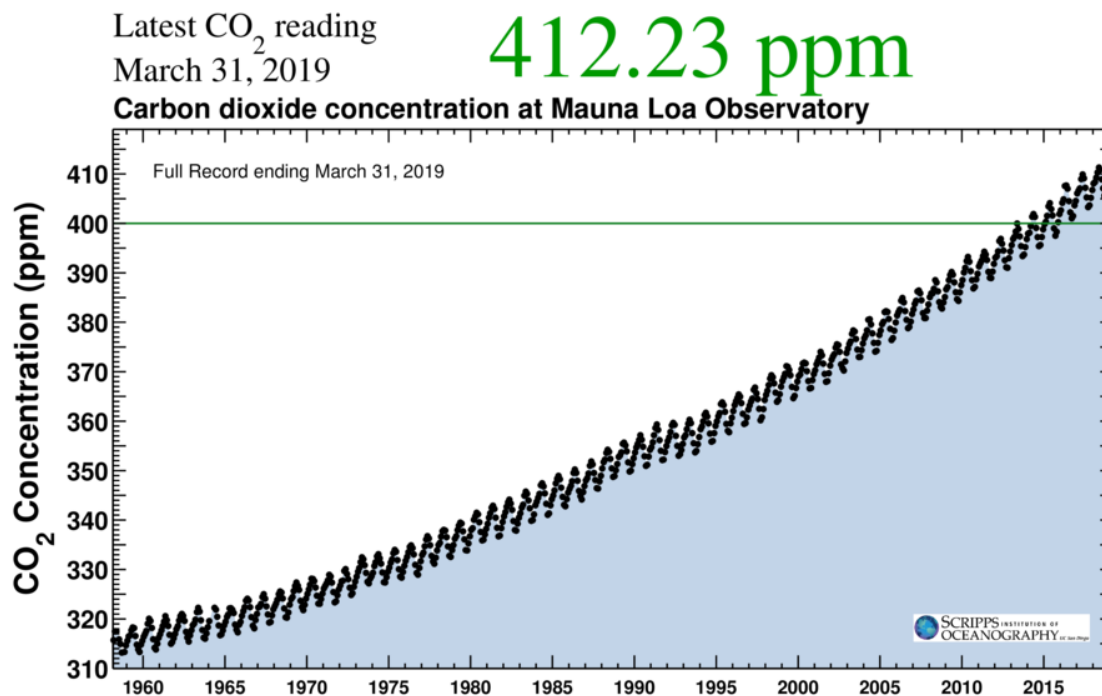
A number of other variables have contributed to the U.S. climate strategy. First, climate science has advanced to the point that there is little if any disagreement in the climate science community. While uncertainties about the projected effect of carbon in the atmosphere remains, increased incidents of flooding, forest fires, and sea level rise illustrate impacts of carbon pollution and climate disruption.

**The Paris Agreement** of 2015 finally brought almost every country into agreement on the basic science, and the old climate battles between the U.S. and China seem to have been largely resolved. Both are lowering the percentage of coal-fired power as a percent of their energy supply, both are working to sharply increase the percentage of renewables, and both are working on research into yet another generation of renewable technologies. Even so, China, the largest current greenhouse gas emitter, currently generates four times as much coal-fired electricity as the U.S. India has replaced China as the primary country of concern. It is rapidly boosting coal consumption and to date lacks China's commitment to a vast increase in renewables. Both China and India face huge challenges in raising their millions out of poverty, and for the last 20 years U.S. technical advice and expertise has proved to be invaluable for these countries. The Paris Agreement was designed to provide a forum in which to encourage big emitters to slow their emissions, but now that the U.S. has renounced this global accord, it is difficult for the U.S. to maintain its history of constructive and persuasive leadership.

## **THE SCIENCE IS STEADY**

Based on my personal experience and engagement, one of the most important observations I can share with this Subcommittee is that the science has been remarkably consistent, even as our understanding of certain details has improved.

Again, you need look no further than Gus Speth's authoritative review of climate science and policy across U.S. administration for the past 50 years to see that the basic understandings related to the build-up of carbon dioxide in the atmosphere and its likely effects have been known by the US government for half a century.



By the late 1970s – 40 years ago – U.S. government agencies and a broad swath of the scientific community understood the basic science of climate change and knew that continued and increasing levels of fossil fuel emissions would lead to climate danger.

What is most striking, in fact, is how well the scientific assessments from the 1960s and 70s, the IPCC reports and other reviews have held up over time. We have known since then that a doubling of carbon dioxide concentrations in the atmosphere will cause the Earth's global average temperature to increase by 1.5-4.5 degrees Celsius, with significant consequences for weather patterns, sea levels, natural disasters and a range of other impacts. Mr. Chairman, I hope that the Speth report will be included in the record as a supplement to my testimony.

To confirm and enhance these basic understandings, our government – the Administration and Congress – have done a remarkable job strengthening our scientific infrastructure:

- We created the National Center for Atmospheric Research (NCAR) in Boulder, Colorado (which I represented in Congress).
- Major climate modelling capabilities were established through NOAA at Princeton, the National Science Foundation at NCAR, as well as programs by the RAND Corporation and DARPA, all focused on better understanding of atmospheric, terrestrial and oceanic systems.
- The US Global Change Research Program was established to coordinate government research efforts and flesh out uncertainties in our understanding of how the climate system works and could be impacted by increased carbon in the atmosphere.
- At the direction of Congress, Regular National Climate Assessments were initiated to understand the impacts of climate change on a national and regional basis so that

governmental authorities could respond with appropriate adaptation and mitigation strategies.

Indeed, for much of the past 50 years, the common refrain has been that we need more climate science to determine whether and how best to respond to the challenge. Thankfully, we have more scientific wisdom as a result of all those scientific undertakings, but it must be said that the fundamental conclusions and concerns have not changed. And that it is why it is so regrettable that increased scientific knowledge has not been matched by commensurate wisdom in our policy responses.

## **U.S. POLICY LACKS URGENCY**

Mr. Chairman, the hard truth is that the U.S. government policy response to the global climate crisis has lacked urgency for most of the past half century.

For the most part, agencies and technical bodies have known of the steps that would be needed to transition away from fossil fuels, including conservation, efficiency, solar and other renewables. Nevertheless, over most of the last 40 years, the government, the industry and the media broadly have continued to support, expand and foster the priority of a national fossil fuel-based supply system.

Indeed, energy policy has been dominated by attempts to shift our reliance from one fossil fuel to another – often in contradictory fashion.

The Arab oil boycott and the resultant gas lines and increased prices brought home to America in stark relief the vulnerability of the country to foreign oil. In response, President Carter proposed the massive Energy Mobilization Board, which would have given unprecedented authority to the central government to override federal, state and local laws, and proposed a massive increase in synthetic fuels production, all in service to the goal of sharply increased U.S. energy production. After a bitter battle, Congress ultimately rejected the EMB by a single vote, but the conflict over the EMB clearly presaged the emerging confrontations between energy production from all sources, and the increased scientific consensus for energy transitions to more climate-friendly sources. Clean energy alternatives vs. fossil fuel development was emerging as the central policy issue. As a general matter, we have chosen to do much of the latter and a little of the former.

Responding to the Arab oil boycott and the prospect of future energy shortages, the government rapidly increased its policy of “fuel switching,” shifting electricity generation from oil and gas to coal, and dramatically expanded coal leasing on federal lands. This shift was also accompanied by important initial conservation program (fuel economy standards, the National Energy Conservation Policy Act) and expanded renewable energy research.

In the 1990s, fossil priorities were flipped again as enhanced recovery techniques yielded new supplies of natural gas and the United States began a major shift away from coal and to natural gas for electricity and industrial purposes. The Energy Policy Acts of 1992 and 2005; the Energy Independence and Security Act of 2007 and other measures helped to pave the way for improvements in America’s domestic energy posture over the past decade. A more coherent approach to climate and energy policy and the investments and initiatives contained in the stimulus

legislation of 2009 have helped pave the way for greatly expanded reliance on renewable energy and energy efficiency across the economy – to the benefit of consumers and the climate alike.

As a result, the energy sector is cleaner, more diverse, prosperous and secure. Government data shows that 2007 was a high-water mark for U.S. energy consumption and for high carbon dioxide emissions, and for the nation's reliance upon fossil fuels.

Hundreds of thousands of good-paying new jobs have been created in unconventional oil and gas production, solar and wind, and in the growing business of saving energy. America's farmers are also finding new markets in the alternative fuels market. New businesses, entrepreneurs and innovators are taking advantage of the new opportunities.

Our energy sector is also more efficient and clean. Total primary energy use declined by 3.1 percent from 2007 to 2017, while the economy grew by more than 15 percent despite the 2008 recession. Emissions reductions have also accelerated, with energy-related carbon dioxide emissions down 15 percent over the past decade.

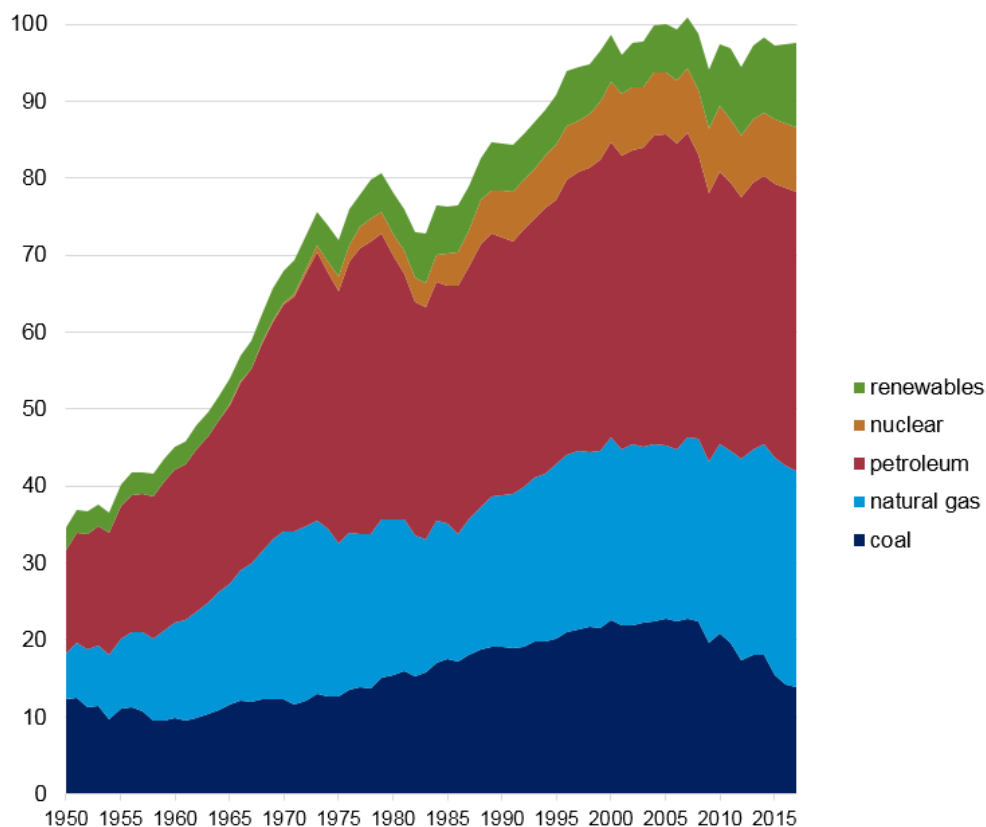
The improvement in America's economic, environmental and energy security is historically significant and hard-won.

Still, the hard truth is that we have not prioritized climate protection in the manner that we should, or that our children and grandchildren need. In 1978, the U.S. relied on fossil fuels for over 90 percent of its primary energy production. Forty years later, that figure has barely dropped, to just over 80%. The concentration of carbon in the atmosphere has increased by about 30 percent in the last 50 years, and if current trends continue, the concentrations will increase even more, and temperatures will continue to rise.

This past 40-year period could have been a period of a smooth transition toward a more broadly efficient and renewable energy economy. But progress has been slow, as can be seen in the following table:

## U.S. primary energy consumption by major sources, 1950–2017

quadrillion British thermal units



Note: Petroleum is petroleum products excluding biofuels, biofuels are included in renewables.

Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3, April 2018



Our collective inability to break our fossil fuel dependence is understandable on one level – climate policy weaves its way through the entire fabric of the U.S. economy and society. It challenges us to change, impacts virtually every sector and causes us to consider our responsibilities to future generations. These are major barriers in and of themselves. But they are exacerbated by more pernicious forces.

Since at least the late 1980s, the American political dialogue about climate change has been polluted by willful misinformation designed to delay, diminish and otherwise prevent action to prevent action to stem climate change, certainly the greatest economic, environmental and social challenge facing humanity.

In large part, we have not met our responsibility to future generations because entrenched special interests have invested handsomely in strategies designed to protect today's profits at the expense of future well-being. These have included:



- elaborate public relations campaigns to cast doubt on consensus findings about the relationship between the burning of fossil fuels and our changing climate. The doubt mongering has been insidious – from disparaging peer-reviewed science to propping up quack assessments that could never pass muster with standard peer-review processes.
- Extensive lobbying campaigns against legislative proposals that would reign in emissions.
- Millions of dollars worth of contributions to political candidates pursuant to our broken system of campaign finance. The scale of the money supplied for political campaigns makes it hard for even well-intentioned political leaders to ignore the peril of getting crosswise with fossil-dependent industries.
- And deliberate efforts to mask from shareholders and others the financial risks facing oil and other companies.

According to a recent report highlighted by the Guardian newspaper, “the largest five stock market listed oil and gas companies spend nearly \$200m a year lobbying to delay, control or block policies to tackle climate change, according to a new report.” (The article is Appendix 1 of my testimony). But that is only the tip of the proverbial iceberg because these oil company expenditures have been supplemented by millions more from other interests.

These efforts began in earnest in the immediate aftermath of the Hansen hearings, when I first encountered the shameful industry tactics undertaken by the now disbanded and thoroughly discredited Global Climate Coalition. These strategies have continued unabated for decades under the guise of trade associations, think tanks and other organizations bankrolled with multiple millions of dollars’ worth of ongoing contributions from oil and other fossil-based industries.

In short, money spent on misinformation and the political process have been overwhelming contributors to perpetuation of the status quo – unfettered use of the Earth’s natural resources.

## **A NEW URGENCY**

Mr. Chairman, the reason I recount even this abbreviated history is to underscore that we have known – in the Administration and in the Congress – about the approaching catastrophe of climate change for much of the past four decades. While some progress has been made, our policy response has been woefully inadequate. With every year that has passed, the consequences and costs of our failure to act have grown. The effects of our emissions to date are already baked into the climate system and will be borne out in sea level rises, more extreme weather events and a host of other impacts. They cannot be reversed within the lifetime of anyone now alive. We must live with the inevitable harms that are coming.

But every step we take today – today and tomorrow and the next day – to reduce and then eliminate our emissions will pay dividends, by helping to keep our Earth hospitable to human well-being. We have an urgent moral obligation to our children and grandchildren to act now to protect their future.

That is the *casus belli* of climate change, and I believe it is well known to everyone here.

The scientific community has been absolutely clear about the scale and urgency of the unfolding climate changes. Two out of three voters now say they are worried about global warming, the highest percentage yet recorded. The governors of 21 states, representing more than half the

economy and 49% of our population, have signed onto the U.S. Climate Alliance. Most recently, millions of young people have come forward to demand attention to the climate crisis, the most far-reaching long-term threat to their future.

## **THE GREEN NEW DEAL**

It is distressing, then, that the introduction of a simple resolution on a Green New Deal has sparked completely irrational responses, including the preposterous idea that attending to nation's climate and social challenges is some kind of threat to the foundations of our market-based democracy, destruction of transport, and even the elimination of hamburger. I am surprised that opponents have not yet listed increased lower back pain as one of the products of The Green New Deal. That would be quite a feat for a 2000-word resolution that at its essence is a call for purposeful development of response strategies.

At this point, the Green New Deal is a much-needed and urgent plea for focus by our national leaders on a cleaner, more secure and just country. It concentrates on the ends – climate protection achieved through shared social and economic progress – and urges concerted Congressional investigation of appropriate means for achieving them. A properly functioning Administration and Congress would do just that through engagement of the public, expert hearings and the legislative process.

While the Green New Deal has sharply illuminated the emerging climate crisis and the imperative of increased government action, it has also helped to illustrate the interrelationships of climate to most other elements of our living earth. These elements – nutrition, clean air, infectious diseases, biological diversity, economic development – are now understood as part and parcel of the health of human civilization and the state of the natural systems on which it depends. The rapidly growing discipline of “Planetary Health” is pulling together these threads into a more comprehensive framework, and it is folly to minimize these relationships as many of the critics of the Green New Deal have done.

Human health is one of the most important impacts of fossil fuel usage, and evidence is now clear that fossil fuels are not only linked to climate change but also to the plethora of epidemics resulting from exposure to their end use products.

For example, the emerging field of analysis of endocrine disruption and methane gas production is among these. As a recent edition of Orion reported:

“Methane related to fracking does not by itself harm human health, but it is accompanied by hundreds of other toxic gases. Among them is a group of aromatics, which are collected in condensate tanks at the wellhead for delivery to chemical and product manufacturing plants around the country....These chemicals are used to make plastics, cosmetics, pharmaceuticals, fire retardants, pesticides, baby and children's toys, food storage containers, furniture and carpets, computers, phones, appliances, and lots more.

Only a pittance of the estimated 100,000 or more synthetic chemicals made from the aromatics have been thoroughly tested for their effects on the endocrine system. The government requires industry to test for cancer, but not for connection with increasing epidemics of endocrine system related disorders—Attention Deficit Hyperactivity Disorder,

autism, intelligence and behavioral problems, diabetes, obesity, cancers in children and adults, abnormal genitalia, hypospadias, infertility, Parkinson's or Alzheimer's Diseases. These are costing families and governments a fortune, while also depriving us of our ability to function as individuals to our fullest potential."

As ever, opponents of federal action are throwing up furious accusations and exaggerated rhetorical attacks about the means for addressing the climate crisis – not because they have alternative solutions, but because they want to prevent action of any kind, squelch the debate before it even begins. Meanwhile, the climate is changing, the impacts are exacting enormous costs, and our so-called leaders are foisting the cost and responsibility of addressing yet another challenge on future generations. Like so much of today's political rhetoric, the reaction to the Green New Deal has been nothing more than a smokescreen for dysfunction, denial and dereliction of duty.

To be sure, there is a legitimate debate to be had about the timing of priorities, the sequencing of initiatives and the most effective climate solutions. That's exactly what an effective Congress should examine and debate. Responding to the massive climate crisis we've created will require that every sector of the economy be examined so that we come to grips with the fact that we must move beyond the age of hydrocarbons and harness new means of generating electricity, powering our transportation systems, managing agriculture and becoming more efficient.

Many of the specific steps toward the needed global energy transition are clear:

- If we develop financial instruments to incentivize the producers of fossil fuels to reduce the emissions that their product creates, we will increase the attractiveness of alternatives, and behavior can rapidly change. Harnessing market-based strategies such as a long-term pricing signal that unleashes the private sector creativity for the coming zero-carbon future should be a centerpiece of urgent new measures. That is the lesson we learned from the acid rain provisions in the Clean Air Act Amendments of 1990: market signals work, cheaper and faster than anyone predicts. If the revenues from those penalties are returned to the American people to invest as they see fit, the economy will be unharmed and may very well benefit – which is to say, there will be no net cost.
- Faster progress by electric utilities in decarbonizing their generation, to rapidly move away from coal-based generation. In the last decade, half of the coal fired power plants have closed, since coal can no longer compete against cheaper alternatives such as natural gas, wind and solar. More capacity has been shut down during the first two years of the Trump administration than under all of Obama, and coal now fuels less than 30% of U.S. electricity generation.
- Concurrently, it is imperative that a national effort be launched to assist with transitions in coal dependent communities. As Senator Robert Byrd of West Virginia advocated, this will take a significant national effort for what has become a notional requirement for affected workers, families and communities.
- Energy efficiency measures litter the books, but to reach their enormous promise they must be orchestrated with stronger financial incentives, backed by more aggressive coalitions of homeowners, homebuilders and commercial real estate. Efficiency is certainly the "first fuel."

- All sides of the political spectrum agree on the need for sharply increased funding for research and development of advanced energy technologies. This should be a relatively simple task: put our money where our mouth is.
- Maintain the high fuel economy standards once agreed by the automobile industry. The mix of advanced fuels, new technologies and materials, along with increased electrifications of the vehicle fleet, can make a serious contribution to the transportation sector, which currently accounts for nearly 40% of all U.S. carbon emissions. We have less understanding for ways to lower emissions from air traffic and sea transit; these growing sectors need augmented research and development.
- Augmented examination of all zero emission power technologies, including safe, affordable and probably modular nuclear reactors and large-scale carbon capture and re-use.
- Better use of the vast potential of the agriculture sector, building carbon in soils, improving health and resilience to droughts and floods, and using the potential of financial incentives to boost broader cooperation.
- Other innovative instruments for helping to attack the climate issue include the movement for university and foundation endowments to divest from fossil fuels. Fundamental to their advocacy is the clear contradiction between what they work on (climate research, teaching and climate-proofing their physical plants) while continuing to take resources from the same fossil fuels industry that has caused most of the problem to begin with. A phase out strategy is recommended – to cease support for development of new sources of fossil fuels – but despite evidence of the increased climate crisis, response among conservative institutions and their managers remains slow, mirroring the slow response of our government.

These measures and a commentary on the Green New Deal are incorporated in a short essay which I recently co-authored with former Senator Gary Hart, and which is attached to my testimony (Appendix 2).

All of these things can and must be done. Political nonsense that doing so will destroy the economy obscures the reality that the broad expert consensus is that continued inaction is the path to widespread economic calamity. With every day that passes without meaningful action, we worsen the pollution of our atmosphere and the impacts that inevitably result.

We also diminish the possibility – I would say likelihood – that the world will be a better place if we act now, and not just better than it would be if we do nothing and let this slow-motion disaster take its toll. The world may also be a better place in absolute terms – yes, better for ordinary citizens than it is today.

How can that be? Well, first understand that the cost of the needed transition will not be the tens of trillions of dollars that some scaremongering naysayers have claimed. It will be closer to zero than it will be to those estimates, and with well-designed policies it could lead to a stronger, more prosperous economy. And it will help us avoid the much larger costs and disruptions that current and future climate changes will impose on our nation.

Even more important from a political perspective, Americans will like their new world better than the old:

- They will like getting a regular check from the fossil fuel companies, which they can use to change their energy use or otherwise improve their lives – a small blow against income inequality.
- They will like the new jobs and business opportunities that will flow from market-driven innovation – America’s greatest strength.
- They will like the cleaner water, cleaner air, and improved public health that will come from reducing the extraction of fossil fuels and their combustion in power plants and vehicles.
- They will like the security of having energy sources that are freely abundant, inexhaustible, and, increasingly, cheaper than fossil fuels.
- They will like vehicles that are nearly maintenance-free because they have so few moving parts.
- And they will like incentives for planting trees and protecting our soil, enabling robust food production and protecting our most precious natural areas.

Will this transition be complicated and difficult? In politics, change is always difficult, and of course we must cushion the potential harm to specific communities and groups. But done right, the transition to clean energy can be a boon, not a burden, to our economy.

Mr. Chairman, we must act now – because we have no choice. After 40 years of delay, the sand has run out of the hourglass. But hope is the best motivator – and if we act wisely, we can create a better world for all.

Thank you for inviting me to testify.

## APPENDIX 1

*The Guardian*

Top oil firms spending millions lobbying to block climate change policies, says report

Ad campaigns hide investment in a huge expansion of oil and gas extraction, says InfluenceMap

By Sandra Laville Thu 21 Mar 2019 20.01 EDT Last modified on Fri 22 Mar 2019 09.13 EDT

The largest five stock market listed oil and gas companies spend nearly \$200m (£153m) a year lobbying to delay, control or block policies to tackle climate change, according to a new report.

Chevron, BP and ExxonMobil were the main companies leading the field in direct lobbying to push against a climate policy to tackle global warming, the report said. Increasingly they are using social media to successfully push their agenda to weaken and oppose any meaningful legislation to tackle global warming.

In the run-up to the US midterm elections last year \$2m was spent on targeted Facebook and Instagram ads by global oil giants and their industry bodies, promoting the benefits of increased fossil fuel production, according to the report published on Friday by InfluenceMap.

Separately, BP donated \$13m to a campaign, also supported by Chevron, that successfully stopped a carbon tax in Washington state – \$1m of which was spent on social media ads, the research shows.

Edward Collins, the report's author, analysed corporate spending on lobbying, briefing and advertising, and assessed what proportion was dedicated to climate issues.

He said: "Oil majors' climate branding sounds increasingly hollow and their credibility is on the line. They publicly support climate action while lobbying against binding policy. They advocate low-carbon solutions but such investments are dwarfed by spending on expanding their fossil fuel business."

After the Paris climate agreement in 2015 the large integrated oil and gas companies said they supported a price on carbon and formed groups like the Oil and Gas Climate Initiative which promote voluntary measures.

But, the report states, there is a glaring gap between their words and their actions. The five publicly listed oil majors – ExxonMobil, Shell, Chevron, BP and Total – now spend about \$195m a year on branding campaigns suggesting they support action against climate change.

But the report said these campaigns were misleading the public about the extent of the oil companies' actions because while publicly endorsing the need to act, they are massively increasing investment in a huge expansion of oil and gas extraction. In 2019 their spending will increase to \$115bn, with just 3% of that directed at low carbon projects.

Shell said in a statement: “We firmly reject the premise of this report. We are very clear about our support for the Paris agreement, and the steps that we are taking to help meet society’s needs for more and cleaner energy.

“We make no apology for talking to policymakers and regulators around the world to make our voice heard on crucial topics such as climate change and how to address it.” Chevron said it disagreed with the report’s findings. “Chevron is taking prudent, cost-effective actions and is committed to working with policymakers to design balanced and transparent greenhouse gas emissions reductions policies that address environmental goals and ensure consumers have access to affordable, reliable and ever cleaner energy.”

The successful lobbying and direct opposition to policy measures to tackle global warming have hindered governments globally in their efforts to implement policies after the Paris agreement to meet climate targets and keep warming below 1.5C.

## APPENDIX 2

The concept of a Green New Deal has taken on meteoric life, surging into the national political conversation and thematically raising attention to the issue of climate change. But once again, the dysfunctional political establishment seems determined to prove that Washington is the Promised Land for the status quo.

Two out of three voters now say they are worried about global warming, the highest percentage yet recorded. The governors of 21 states, representing more than half the economy and 49% of our population, have signed onto the U.S. Climate Alliance. Most recently, young people have come forward to demand attention to the climate crisis, the most far-reaching long-term threat to their future.

Yet the introduction of a simple resolution on a Green New Deal has sparked completely irrational opposition, including the preposterous idea that attending to the nation's climate and social challenges is some kind of threat to the foundations of our market-based democracy. That would be quite a feat for a 2000-word non-binding resolution that at its essence is a call for purposeful development of response strategies.

At this point, the Green New Deal is a much-needed and urgent plea for focus by our national leaders on a cleaner, more secure and just country. It concentrates on the ends – climate protection achieved through shared social and economic progress – and urges concerted Congressional development of appropriate means for achieving them. A properly functioning Administration and Congress would do just that through engagement of the public, expert hearings and the legislative process.

The issue is one of scope and scale: Are we Small America or Large America? Small America says no major public undertaking should begin until markets find a way to commercialize the venture. Large America says that we rose out of the Great Depression and won World War II by thinking big and acting vigorously. The scale and ambition of the Green New Deal have made its blueprint the target of the timid and the fearful. Climate, income stagnation, and decaying infrastructure are epic threats. Our response will determine whether we are still capable of being Large America.

To be sure, there is a legitimate debate to be had about the timing of priorities, the sequencing of initiatives and the most effective climate solutions. That's exactly what an effective Congress should do. Responding to the massive climate crisis we've created will require that every sector of the economy participate as we come to grips with the fact that we must move beyond the age of hydrocarbons and harness new means of generating electricity, powering our transportation systems, managing agriculture and becoming more efficient.

Many of the specific steps toward the needed global energy transition are quite clear. In our view they include:

- \* Harnessing market-based strategies such as a long-term pricing signal that unleashes private-sector creativity for the coming zero-carbon future.
- \* Faster progress by electric utilities in decarbonizing their generation.



- \* Stronger consumer incentives for the "first fuel" – energy efficiency.
- \* Sharply increased funding for research and development of advanced energy technologies.
- \* Concerted efforts to decarbonize transportation.
- \* Consideration of all zero-emission power technologies, including safe and affordable modular nuclear reactors, and of large-scale carbon capture, storage and re-use.
- \* Help for farmers who want to build up the carbon in their soil – improving its health and resilience to droughts and floods.

All of these things can and should be done. Political nonsense that doing so will destroy the economy obscures the reality that continued inaction is the path to widespread economic calamity. With every day that passes, we worsen the pollution of our atmosphere and the impacts that inevitably result.

Much of the hysterical response to the Green New Deal has been shameful – demonstrating yet again that the great obstacle to change in our land is the choking pollution that emanates from our dysfunctional political institutions. It's time to clear the air and get to work.

Gary Hart  
Timothy E. Wirth

*(Hart and Wirth served together in the U.S. Senate, representing the State of Colorado.)*