



Congressional Testimony of

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Chairman Tonko, Ranking Member Shimkus, distinguished members of the committee, thank you for inviting me here today to discuss opportunities to build a clean energy economy for the 21st Century. My name is Dan Esty, and I am a Professor at Yale University's Environment and Law Schools, as well as the Director of the Yale Center for Environmental Law & Policy. From 2011 to 2014, I took a leave from Yale to serve as Commissioner of the Connecticut Department of Energy and Environmental Protection. In the late 1980s and early 1990s, I served in a number of senior positions at the U.S. Environmental Protection Agency under EPA Administrator William K. Reilly and President George H.W. Bush — including work as a negotiator of the 1992 UN Framework Convention on Climate Change.

I am grateful for the opportunity to share my perspective on how best to move our society toward a sustainable future undergirded by a clean energy economy. My more than thirty years of work on climate change issues makes me well aware of challenges we face in decarbonizing, but I also want to highlight the equally important opportunities this energy transition offers our nation — and how we might structure policies to ensure that our pathway to decarbonization not only protects the planet but also lays the foundation for a vibrant American economy in the decades ahead, improves our national competitiveness, and provides a smooth transition for those whose lives and communities will be transformed by the shift away from fossil fuels.

I am an unusual professor having served in government in both Republican and Democratic administrations and having helped dozens of companies, foundations, and other organizations bring a focus on sustainability into their day-to-day strategies, as well as having spent decades researching what regulatory approaches deliver the best results. I have written about how our existing framework of environmental law and policy was built on a bipartisan

basis – and how it has improved water and air quality across the country, strengthened our management of waste, reduced our exposure to hazardous chemicals, and been broadened to try to ensure that environmental progress benefits all of our citizens.¹ But I have also chronicled how the 21st Century demands new environmental protection strategies that take advantage of the enormous advances of recent years in environmental public health and ecosystem science as well as the new technologies (such as the internet, Big Data, and smartphones) that have transformed many aspects of American life but have not been fully deployed in the environmental arena to ensure that our approach to pollution control is stronger and lighter as well as more flexible and efficient.² I have distilled the core lessons I have learned over the past 30+ years in the paragraphs that follow, centered on the need for a multi-dimensional climate change policy framework that emphasizes:

1. Incentives
2. Innovation
3. Information
4. Investment

To decarbonize our economy at the speed and scale necessary to tackle climate change will require a portfolio of policies — some of which entail economy-wide initiatives, including carbon pricing, but others of which might be advanced within specific sectors on a more targeted basis.

Incentives

Our 21st Century sustainability strategy must go beyond the *red lights* and stop signs that characterized environmental protection in the past. Instead of just telling people and companies what *not* to do, we need a structure of incentives — green lights, if you will — that encourages environmental problem solving.³ Fundamentally, we need a broad framework of incentives that engages the creative spirits and entrepreneurial talent across our nation and around the world in delivering the breakthroughs that we need to ensure a cost-effective transition to a clean energy future. These incentives should take a number of forms.

First, polluters should pay for the harms they cause. The most important step toward a “green lights” framework of incentives to promote decarbonization would be the adoption of the *polluter pays principle*.⁴ Instead of the government *permitting* pollution — literally issuing permits that license emissions — polluters should be held accountable for the harm they cause. This principle — that *externalities should be internalized* as economists might say — goes back 400 years in the Anglo-American legal tradition and has long been understood as fundamental to the protection of property rights. The same principle — that emissions should be stopped or paid for — could also be framed as *do no harm*, the ethical foundation of the medical profession.

In the context of decarbonization, the commitment to making polluters pay for the harm they cause means charging for the greenhouse gases they emit. This price signal would

provide a clear incentive to the business community, and to the public more generally, to reduce their emissions, while still allowing companies and individuals to determine *how* to adjust their practices.

Pricing pollution has produced major policy successes in the past. For example, the 1990 Clean Air Act Amendments (adopted with overwhelming bipartisan Congressional majorities in both the House and Senate) set up an emissions allowance trading system to control sulfur dioxide emissions and reduce acid rain. This “cap and trade” approach spurred creative means of reducing emissions that delivered environmental benefits at a fraction of the projected cost, while avoiding the need to have the government pick “winners” or specify technology requirements. Likewise, the escalating tax on chlorofluorocarbons (CFCs) in the 1990 Amendments helped spur the private sector to develop CFC substitutes across a range of uses – thereby protecting the Earth’s ozone layer with minimal economic disruption and at low cost.

In a similar spirit, I think the transition toward a more energy efficient future based on carbon-free electricity could be advanced through a structure of economy-wide incentives. In this regard, I favor a gradual but steadily increasing greenhouse gas emissions charge that begins at \$5/ton of CO₂ equivalent, escalating at \$5/ton per year for twenty years to a final price of \$100/ton. The low initial charge would make the burden on consumers and businesses modest in the early years, thereby ensuring that companies, communities, and families alike would have time to transition toward cleaner energy options and encouraging them to get on board the decarbonization train rather than seeking to derail it.

Note that the carbon-optimization calculus for *future* investments would change immediately. Anyone considering an energy-intensive capital investment — whether that might be a power plant, an industrial building, or even a new car — would factor the \$100/ton long-term carbon charge into their choice. This carbon pricing framework would thus provide a clear incentive for commitments to energy efficiency and carbon-free electricity in a manner that minimizes transition costs and maximizes political appeal.

Any carbon pricing policy should be attentive to distributional consequences across a number of dimensions as well as economic efficiency. A carefully designed transition strategy should be adopted that would assist both lower-income Americans and those who live in rural areas, who might be more dependent on fossil fuels. These issues of equity can be – and should be – addressed through the distribution of carbon charge dividends. One possibility would be to lower payroll taxes, which represent a significant part of the tax burden on America’s middle class.

Another revenue rebate possibility would be to distribute the funds collected to the 50 states, who could then reinvest the money in ways that best position their residents for economic success in the years ahead. Some states might choose to lower taxes, while others might invest in economic development strategies, healthcare programs, high-speed internet, or other initiatives that attend to the needs of those who might otherwise be overlooked during the

transition to a clean energy future. A variation on this theme might even adjust the level of each state's carbon charge rebate to reflect the state's carbon-intensity, ensuring the greatest level of transition support goes to the states undertaking the most substantial energy transformations.

And while a federal carbon charge would provide the broadest possible “green light” to encourage movement toward clean energy, some of the same advantages can be achieved by state-level greenhouse gas pricing systems such as those put in place by California's AB32 or the Regional Greenhouse Gas Initiative (RGGI) in the Northeast. Indeed, one of the other critical policy lessons of recent years might well be that a bottom-up framework of law and policy sometimes has advantages over top-down approaches.

Additional incentives for problem solving and innovation might be centered on specific clean energy challenges.⁵ Just as the recently adopted 45Q tax credits have encouraged a focus on carbon capture and sequestration, targeted funding and incentives to promote research and development on other requirements for a clean energy future might be considered to advance cost-effective batteries or other modes of electricity storage, smart grids, distributed generation, and other technology breakthroughs.

Innovation

No element of environmental strategy is more important to the success of decarbonization than innovation. Broadly speaking, one of the most significant conclusions of social science in the 20th Century centers on the importance of *continuous improvement* through innovation. Organizations and institutions that reinvent themselves and promote fresh thinking dramatically outperform those that do not. Our 20th Century approach to environmental law and policy did not prioritize innovation; our 21st Century policy framework must do so.

I would therefore put innovation at the very heart of any policy push toward a clean energy future, not only as a way to protect the planet, but also to position America at the forefront of the emerging clean energy economy.⁶ While the advances of the Information Age have transformed many sectors of society — from how businesses do marketing to how baseball teams pick players — we have just begun to deploy digital strategies in response to our energy and environmental challenges. We know, however, that if companies have to pay for their emissions, they will succeed in finding new and better ways of doing business that minimize their pollution charges. This spur to innovation means that enterprises think not only about how to improve their own performance, but also how they might solve their customers' energy and environmental problems.

In designing the policy framework to promote innovation, I would focus broadly and not just on technology breakthroughs. Indeed, we should also be looking for innovation in

policy design, incentives for changed behavior, public engagement, partnerships, and finance.

Information

A new emphasis on environmental performance data and metrics offers another way to promote sustainability broadly and movement toward a clean energy future in particular.⁷ Thus, a new policy framework designed to promote decarbonization might establish a set of sustainability indicators that can be used to gauge the relative success of our country, states, cities, companies, and households in advancing toward a decarbonized future. By providing a methodologically consistent structure for reporting on sustainability performance, we can spur a healthy competition that celebrates leaders, calls out laggards, and highlights best practices. A commitment to a more data-driven and empirically rigorous policy structure would also help to ensure that our environmental protection efforts focus on implementation — and the delivery of “on the ground” progress on climate change and other issues.⁸

With a growing number of investors now wanting their portfolios to reflect their values, including their interest in addressing climate change, *sustainable investing* presents another “information” opportunity to promote decarbonization.⁹ Specifically, while environmental, social, and governance (ESG) metrics already exist, much of the data available fails to inspire confidence among fund managers, investment advisors, or investors themselves. Doubts about the quality of data, methodological underpinnings, comparability, and integrity of the available corporate sustainability metrics represent a major obstacle to an expanded commitment of capital to projects, companies, mutual funds, and other investment vehicles promoting clean energy.

To encourage the flow of capital toward companies advancing solutions to climate change and away from those that are not doing so, ESG metrics need to be made as clear, consistent, and reliable as the financial data on which investors regularly rely. My own research suggests a number of ways that the existing structure of ESG metrics might be improved¹⁰ — including the suggestion that as sustainability-related metrics in general and climate change indicators in particular become more *material* to investors, the Securities and Exchange Commission (SEC) might want to specify a core set of ESG metrics to be included in regular annual reporting.

Investment

Perhaps the greatest shortcoming of environmental policy in the 20th Century was the failure to think about where the money would come from for investments in pollution control. Creative strategies for finance — using limited public money to leverage private capital — must therefore be considered a priority in any policy framework to address climate change. In this regard, we should be looking for ways to support funds committed to

decarbonization through Green Banks, Green Bonds, and other creative sustainable finance tools.

Connecticut's Green Bank, launched in 2011, offers a valuable model in this regard, having used limited funding (some of which represents the proceeds of RGGI emissions allowance auction) to ramp up both energy efficiency and clean energy deployment.¹¹ The Green Bank has moved from having each dollar of public money leverage one dollar of private funding to a model that offers a nearly 7:1 leverage ratio. In addition to moving away from a "subsidy" model to a "finance" strategy for clean energy, the CT Green Bank has adopted a range of other policy innovations, including reverse auctions for renewable energy projects (harnessing competition to drive down ratepayer costs), a robust C-PACE program (which reduces the risk on clean energy loans by having the funds repaid alongside a company's property taxes), default risk-sharing to encourage banks to write clean-energy loans, a commitment to working with cities and towns to reduce the "soft costs" (related to building permits and other regulations) of clean energy projects, and rigorous cost-effectiveness assessments — all of which has translated into \$1.7 billion of high-impact new clean energy investments in the past eight years.

Green bonds generally and climate bonds specifically are providing another source of new clean energy funding. Dozens of companies, the city of San Francisco, the European Investment Bank, and the World Bank have all launched fixed-income investment vehicles linked in some way to specific climate change solutions. While these initial green bond strategies have found some success in raising private capital, stronger verification of the "green" dimension of the projects being supported would be helpful.

Conclusion

With the right structure of incentives, emphasis on innovation, a commitment to re-designing our policy strategies to take advantage of the improved science and cutting-edge technologies of our Information Age, and a fresh approach to financing clean energy investments based on using limited public funds to leverage private capital, we can advance decarbonization, improve environmental outcomes more generally, strengthen our economy, enhance America's global competitiveness, and promote the required energy transition in an efficient and equitable way. As I indicated at the outset, after working in the environmental arena at the global, national, state, and local levels across four decades, I am confident that the United States can lead the world toward a sustainable future. But my experience also suggests that transformative change of the kind required to respond to climate change is almost impossible to deliver under the American political system on a one-party basis because the swing of the political pendulum means that policies that lack a broad base of support will almost certainly be undone when the other party takes power. The decarbonization agenda that I have outlined above will not please all Democrats nor all Republicans, but it offers a number of elements around which a policy compromise might be fashioned and thus a successful response to climate change constructed.

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