Hearing on

"*The Case for Climate Optimism: Realistic Pathways to Achieving Net Zero Emissions*"

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Natural Resources Committee
Subcommittee on Energy and Mineral Resources

Introduction

Good morning to Members of the Committee and thank you for your invitation to testify. I am the Founder and Managing Director of Carbon180, a nonprofit working to foster a prosperous economy that removes more carbon from the atmosphere than we emit.

We must take bold and sweeping action to drive US emissions to net-zero by 2050. Meeting this target will not only take rapid emissions reductions, but also the removal of carbon from the atmosphere. Carbon removal includes natural and technological solutions, from farming in more sustainable ways to building machines that pull carbon dioxide directly from the air. These solutions represent an opportunity: to build a larger toolbox in the fight against climate change, to offset for difficult-to-decarbonize sectors like aviation and shipping, and to reach our climate goals swiftly.

By deploying mature climate solutions today and developing the solutions of the future, the US federal government and this Committee will play a vital role in halting the climate crisis while realizing significant environmental and economic benefits.

Natural Climate Solutions

The land sector is already a powerful tool to fight climate change. Together, US forests, wetlands, and agricultural lands sequester an amount roughly equal to 11% of annual US emissions[1]—a capacity that could be doubled if we take steps today to bolster and scale the land carbon sink.[2] These solutions are low cost and come with a number of co-benefits, like clean water, enhanced biodiversity, decreased fire risk, and flood protection.[3]

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[1] https://www.epa.gov/sites/production/files/2019-04/documents/2019_fast_facts_508_0.pdf
[2] https://advances.sciencemag.org/content/4/11/eaat1869?utm_source=TrendMD&utm_medium=cpc&utm_campaign=TrendMD_1
[3] https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf

Forests

To fulfill this potential, the federal government should take steps toward harnessing the power of public lands. Together, the Bureau of Land Management (BLM) and the United States Forest Service manage 258 million acres of forests.[4] The biggest barrier today to increasing forest carbon stocks on these lands is funding for restoration projects. The US Forest Service only reforests about 120,000 acres per year, despite having a backlog of 10 million acres worth of unfunded projects.[5] While the 2018 Omnibus Spending Package took a first step toward supporting the restoration capacity of federal agencies, dedicated funding for forest restoration must be expanded if we are to reach our 2050 climate goals.

Not only should we expand our forests, but we must also protect the carbon they store from wildfires, one of the many dangers presented by climate change. Specifically, Congress can:

1) increase agency capacity for safe and responsible prescribed burning,
2) increase and create financial incentives for the removal of hazardous biomass from federal lands through BLM stewardship contracts[6], and
3) reduce barriers for the US Forest Service and Department of Interior agencies to coordinate and share resources for forest management.

Farms

Beyond forests, our agricultural lands can also be a key lever to drive decarbonization. Farming practices like no and low tillage, cover crops, compost application, and optimal grazing management can store carbon in our soils while also increasing on-farm yield and building resilience to climate impacts.[7]

Based on Carbon180's direct engagement with farmers across the US, we recommend that Congress support farmers operating on private land by fully funding the USDA's Conservation Stewardship Program and the Environmental Quality Incentives Program and bolstering the technical assistance capacity of the Natural Resources Conservation Service. On public lands, BLM should support carbon storage on the 155 million acres of federal land used for livestock grazing.[8] Providing preferential leasing rates to ranchers who implement carbon storing practices is one potential pathway to incentivize adoption while also supporting ranchers' bottom lines.

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[4] https://www.blm.gov/programs/natural-resources/forests-and-woodlands
https://www.fs.fed.us/about-agency/newsroom/by-the-numbers
[5] https://www.fs.fed.us/forestmanagement/vegetation-management/reforest-tsi.shtml
[6] https://www.blm.gov/programs/natural-resources/forests-and-woodlands/stewardship-contracting
[7] https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf
[8] https://www.blm.gov/programs/natural-resources/rangelands-and-grazing/livestock-grazing

Technology-Based Climate Solutions

Alongside the deployment of natural solutions, technology-based solutions can help us reach the scale of carbon removal indicated by climate science. One of the most promising technology-based solutions is called direct air capture. It separates carbon dioxide from the ambient air to then be stored underground or in commercial products, like building materials, fuel, and plastics. These solutions provide a significant opportunity to create businesses, jobs, and markets that fight climate change. Our analysis estimates that, in the US alone, there is a $1 trillion total available market for the conversion of carbon dioxide into low and negative emissions products.

Direct Air Capture and Carbontech

Direct air capture may be a new technology, but we've already seen a significant drop in costs and increased deployment over the last decade. Today, there are nearly a dozen small-scale plants, with plans for one to scale to capture a full half a million tons of carbon dioxide per year. Federal innovation and deployment policy must keep pace if we are to scale up these technologies in time to meet mid-century climate goals.

While the jurisdiction of this Committee does not focus on R&D, the Committee can support the other two “D’s”: demonstration and deployment. It can work with the private sector to help deploy first-of-a-kind projects on public lands. Just as this Committee supported the development of over 15,000 megawatts of renewable energy,[9] it can support the responsible and efficient deployment of direct air capture and direct ocean capture projects.

Carbon Mineralization

Finally, Congress can support carbon mineralization–an approach that aims to speed up natural reactions between carbon dioxide and certain reactive rocks—by fulfilling the recommendations from the recent National Academies report on “Negative Emissions Technologies and Reliable Sequestration: A research agenda.” Specifically, Congress should support increased research funding and initial field trials performed by the Department of Energy and the US Geological Survey, with a focus on understanding the social and environmental impacts of mineralization and the expansion of the mining industry.

Conclusion

These are just a few of the levers that this Committee and the federal government can pull to unlock our 2050 climate goals while also supporting healthy ecosystems and thriving economies. As Congress considers taking action on climate, we recommend engagement with a broad set of participants, including environmental organizations, labor unions, Indigenous Peoples, frontline communities, and companies, in order to create durable, equitable, and

[9] https://naturalresources.house.gov/subcommittees/energy-and-mineral-resources

effective climate policy. Thank you for the opportunity to testify before you today, and I look forward to your questions.

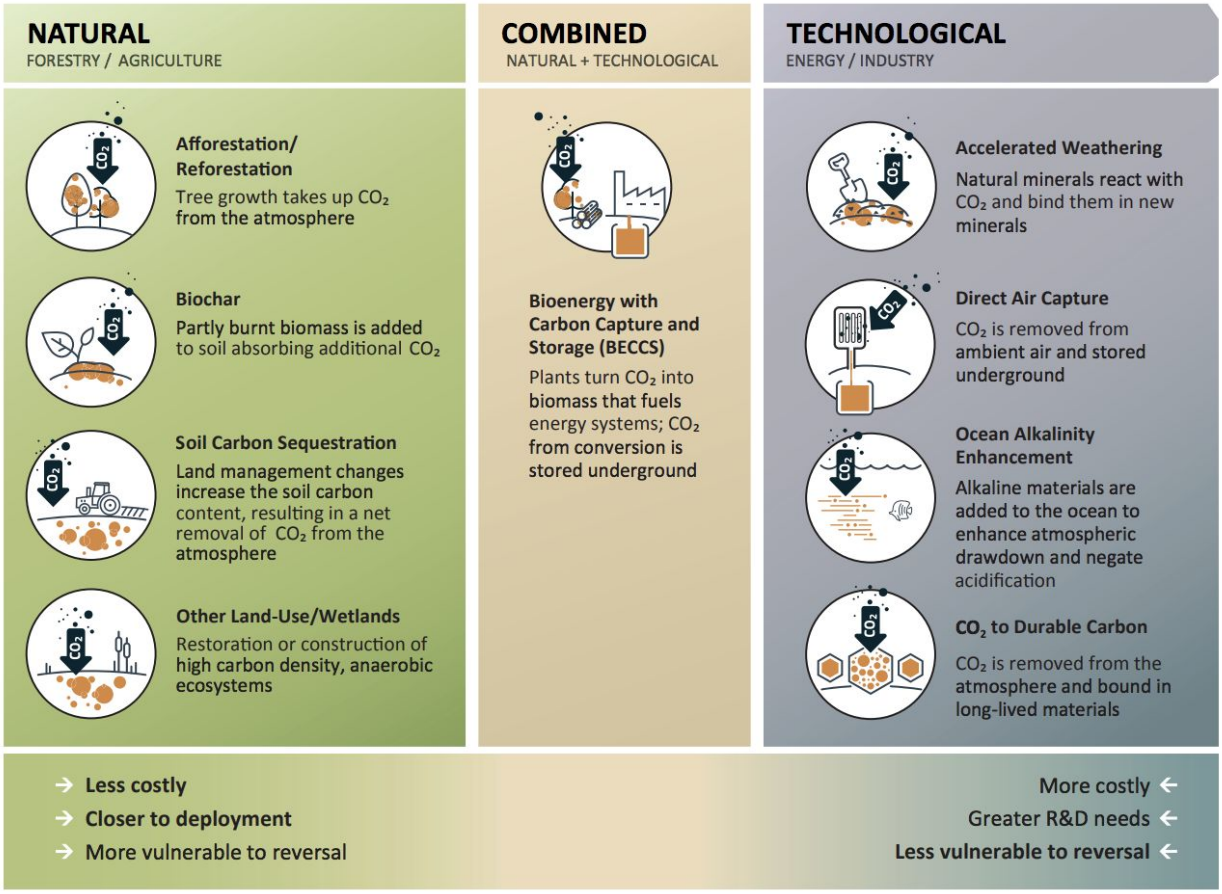
Additional information:

Research Funding: As a global leader in innovation, the United States has the capacity to support the development of carbon removal solutions through research, development, demonstration, and deployment (RDD&D). In 2018, the National Academy of Sciences (NAS) released a report titled "Negative Emissions Technologies and Reliable Sequestration: A research agenda." The report recommends that the US significantly increase its funding and expand its programmatic focus to support carbon removal solutions. Funding today remains strikingly below recommended levels. For example, cumulative funding for direct air capture solutions from the Department of Energy is roughly $11 million, where the recommended research program for direct air capture ranges from $60 to $240 million annually.[10] A significant investment in research is needed to build the next generation of climate solutions. Carbon180 supports the USE IT Act, the EFFECT Act, and the Fossil Energy Research and Development Act, as they bring the federal research budget closer to NAS recommendations.

Other Carbon Removal Pathways: Carbon removal solutions are diverse in nature. They span industries, from agriculture and manufacturing to energy and mining. Each solution comes with its own opportunities, benefits, costs, limitations, and risks. It will be important to deploy all of these solutions at some scale while effectively managing each solution's trade-offs and achieving scale swiftly. See the following figure from the 2017 UNEP Emissions Gap report outlining leading carbon removal solutions.[11]

[10] https://www.nap.edu/catalog/25259/negative-emissions-technologies-and-reliable-sequestration-a-research-agenda

[11] https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf

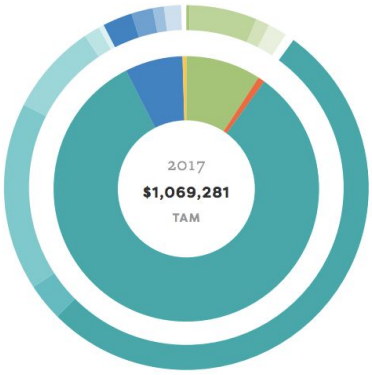


The Carbontech Opportunity: The term ‘carbontech’ refers to technologies that convert carbon from a liability to an asset by turning carbon captured from point sources and direct air capture into valuable commercial products. These products can replace a number of incumbents with low or negative carbon alternatives—transforming the carbon footprint of our building materials, transportation fuels, chemicals, and plastics. This sector represents a $1-trillion total available market in the US and nearly $6-trillion market globally.[12] Below is a table from Carbon180’s market sizing report that breaks out this market by sector:

[12] https://carbon180.org/carbontech-labs-reports

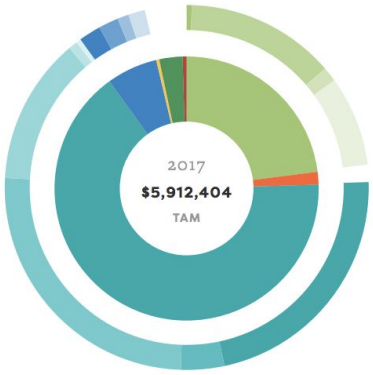
KEY CARBONTECH MARKET SEGMENTS AND FINDINGS

US



PRODUCT	$ IN MILLIONS
BUILDING MATERIALS	**$101,130**
Cements	$1,240
Concretes	$65,000
Asphalts	$12,190
Aggregates	$22,700
WOOD-BASED PANELS	**$12,508**
FUELS	**$882,149**
Gasoline	$543,400
Jet Fuel	$38,760
Diesel	$186,660
Natural Gas	$83,705
Ethanol	$23,550
Biodiesel	$6,074
PLASTICS	**$71,694**
High density polyethylene	$25,393
Linear Low density polyethylene	$20,502
Low density polyethylene	$11,522
Polypropylene	$14,276
CHEMICALS	**$1,800**
AGRICULTURE AND AQUACULTURE	**N/A**
CONSUMER GOODS	**N/A**
TOTAL	**$1,069,281**

GLOBAL



PRODUCT	$ IN MILLIONS
BUILDING MATERIALS	**$1,368,100**
Cements	$24,900
Concretes	$800,000
Asphalts	$77,200
Aggregates	$466,000
WOOD-BASED PANELS	**$96,513**
FUELS	**$3,821,316**
Gasoline	$1,261,000
Jet Fuel	$216,318
Diesel	$1,510,080
Natural Gas	$773,242
Ethanol	$36,720
Biodiesel	$23,956
PLASTICS	**$412,448**
High density polyethylene	$128,250
Linear Low density polyethylene	$103,546
Low density polyethylene	$58,311
Polypropylene	$122,342
CHEMICALS	**$20,217**
AGRICULTURE AND AQUACULTURE	**$169,450**
CONSUMER GOODS	**$24,360**
TOTAL	**$5,912,404**

The US is already a leader in this space, with more companies and projects in this field than any other single country.[13] Federal investment in this space can unlock private sector capital and leverage the economic opportunity of carbontech.

Giana Amador Biography: Giana Amador is the Co-Founder and Managing Director of Carbon180. At the organization, she wears many hats—from guiding the team's strategy and communications to, more recently, building out the organization's agriculture policy program. In all of her work, Giana is focused on connecting economic development, social justice, and climate action. Her past research focused on the political economy of climate change, with an emphasis on green industrial policy and coalition building. Giana has a BS in Environmental Economics & Policy and a BS in Society and the Environment from UC Berkeley.

[13] https://www.thirdway.org/graphic/carbon-capture-projects-map