



IDEAS
ACTION
RESULTS

Federal Policies to Advance Natural Climate Solutions

RECOMMENDATIONS FROM THE BPC FARM AND FOREST
CARBON SOLUTIONS TASK FORCE

Bipartisan Policy Center

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SUMMARY OF THE POLICY RECOMMENDATIONS

Theme 1: Expand existing conservation programs

-   Increase funding for key USDA conservation programs.
-   Set benchmarks and goals for tracking the adoption of climate-friendly practices and quantifying their benefits.
-   Issue guidance on how existing USDA programs can assist landowners who are interested in accessing carbon markets.
-   Streamline the process of setting new standards for conservation practices.
-   Expand USDA's measurement networks to better integrate climate-related data.

Theme 2: Address technical support and workforce needs

-   Recruit private-sector partners to work with USDA and Extension offices to provide training and information on climate-smart practices.
-   Set goals and benchmarks for helping historically underrepresented landowners implement natural climate solutions.
-   Expand technical assistance on climate issues and opportunities to socially disadvantaged and tribal producers and landowners.
-   Invest in education and workforce development, including through extension and scholarship programs.
-   Enhance the collection, sharing, and interoperability of climate-related data by USDA and other agencies.
-   Strengthen USDA's technical capacities by investing in state-of-the-art datasets, models, and analytical tools.

Theme 3: Strengthen voluntary carbon markets

-   Improve the integrity of voluntary carbon markets and reduce barriers to entry through targeted legislation.
-   Use the Commodity Credit Corporation to support climate-smart practices, leveraging carbon markets and supply chain initiatives.
-   Support public-private efforts to develop infrastructure, insurance, and structured finance products for carbon trading.

Theme 4: Develop new finance and insurance instruments

-   Adopt a tax credit to incentivize ecologically appropriate agriculture- and forest-based sequestration.
-   Assess impact of conservation practices on crop yields and insurance payouts, and create incentives for reducing climate risk.
-   Develop new strategies for overcoming barriers related to landownership and succession.
-   Provide a one-time payment to early adopters of climate-smart agriculture and forestry practices.

Theme 5: Enhance carbon storage and climate resilience of farm and forest lands

-   Modernize and expand public and private seed collections and tree nurseries to meet reforestation demand and support scale-up of natural climate solutions.
-   Implement an all-of-government approach to increase wildfire resilience.
-   Create a new cross-boundary initiative to improve the health and carbon sequestration potential of rangelands.

Theme 6: Foster farm- and forest-based climate innovation

-   Increase funding for USDA research and expand R&D collaboration across federal agencies, universities, and the private sector.
-   Expedite FDA approval of safe feed additives that reduce greenhouse gas emissions from livestock operations.
-   Support emerging markets for innovative wood products through better integration of USDA programs, federal procurement, and manufacturer incentives.

	Relating to Forestry		Relating to Farming Inputs		For Congressional Action
	Relating to Livestock		Relating to All Topics Listed		For Executive and Agency Action

I. Background and Context

Climate change presents enormous challenges for America’s agriculture and forestry sectors—but it can also create important new opportunities. This is because strategies for increasing the quantity of carbon stored in plants, trees, and soils, and reducing emissions from agriculture and forestry—often called “natural climate solutions”—are a critical part of the wide portfolio of actions needed to reduce carbon dioxide buildup in the atmosphere and limit the pace and scale of warming this century. Emerging markets for carbon credits, corporate sustainability initiatives, and new government incentive programs could generate tens of billions of dollars per year in new investment for working farm and forest lands within a decade. Natural climate solutions are particularly attractive as a climate mitigation strategy because many of them, implemented effectively, will deliver valuable co-benefits in terms of wildlife habitat, recreation amenities, and air and water quality—often while also increasing resilience to the damaging effects of climate change itself.

Despite growing recognition of these benefits, however, and an increased sense of urgency around climate action more generally, formidable hurdles stand in the way of fully realizing the economic and environmental potential of farm- and forest-based solutions. Markets for carbon credits are still maturing, as concern about poor credit quality in some early carbon offset programs demonstrates. Improving systems for monitoring, reporting, and verifying the carbon benefits of different land management practices is critical and will need to be addressed. Farmers, ranchers, and forest landowners are not in the habit of viewing climate opportunities as part of their core business model, and most lack the time, expertise, and financial resources to assess these opportunities or take the implementation steps required—from changing long-standing management practices and modifying their operations to tracking and quantifying the carbon benefits that result. Many of these changes require large upfront investments—in labor, equipment, and seeds or saplings, for example—that create business risk that must be overcome, especially in the context of rapidly evolving carbon markets and policy and regulatory landscapes.

BPC’s Farm and Forest Carbon Solutions Task Force came together in early 2021 to develop practical proposals for tackling these challenges while also increasing awareness of the substantial benefits a robust national commitment to advancing natural climate solutions could deliver—not only in terms of meeting climate policy goals, but in terms of spurring investment in the long-term productivity and resilience of farm and forest lands and the prosperity of rural communities, including rural communities of color and those who have been historically underserved by federal programs. We believe the federal

government has a tremendous opportunity over the next several years to put in place policies and programs that will accelerate the development of robust and transparent carbon markets; address the accounting challenges and durability issues associated with natural climate solutions; enlist farmers, ranchers, and forest landowners as key partners in climate change mitigation; and create effective incentives for a full range of greenhouse gas reduction and carbon sequestration options.

This report summarizes the task force's main outputs to date: a set of guiding principles and 24 initial recommendations organized according to six policy "themes" that together provide a framework for a comprehensive national approach to natural climate solutions. All these outputs reflect agreements reached after several months of spirited dialogue among task force members and BPC staff, as well as robust consultation with leading scientific experts and technical advisors.

Task Force Goals

Individual task force members bring a wide range of perspectives and backgrounds to these issues, but we share a common view that America's farmers, ranchers, and forest landowners can play a pivotal role in addressing climate change, both by reducing greenhouse gas emissions from their own operations and by adopting practices and technologies that increase the amount of carbon stored in soils, forests, and wood products. The aim of the task force is to expand these opportunities by:

- Fostering open and active dialogue with recognized leaders from government, agriculture, forestry, conservation, and rural communities
- Serving as a resource to policymakers and elevating bipartisan efforts to advance natural climate solutions
- Developing recommendations for scaling public and private investments in farm- and forest-based carbon storage and emission reduction measures while reducing barriers to voluntary stewardship practices

Guiding Principles

In developing recommendations, the task force was guided by four principles that we believe are critical to the effectiveness of farm- and forest-based climate strategies and build on our nation's track record of effective public-private cooperation in the forestry and agricultural sectors. Our policy recommendations are designed to be:

1. *Voluntary and incentive-based.* We believe policies that reward stewardship practices and provide tools and options so that producers and landowners can adopt the strategies that best align with their other management and business goals are the most likely to be effective.

2. *Supportive of the needs of producers and working lands.* Natural climate solutions can be implemented in ways that support working farms, ranches, forests, and production systems while improving productivity and efficiency, and advancing other economic and environmental goals.
3. *Conducive to partnership and collaboration as the best way to address diverse challenges and priorities.* America's agricultural producers and forest landowners operate at different scales, face different constraints, and have different priorities. Cooperation and collaboration between individual landowners, industry and farm groups, conservation organizations, and federal, state, local, and tribal authorities will be critical to develop natural climate solutions that work for a wide range of stakeholders.
4. *Compatible with the goals of accountability and transparency.* Ultimately, the ability to track and quantify benefits and address concerns about the durability of soil- and forest-based carbon sequestration is critical to the business case for investment in natural climate solutions. Clear and widely accepted accounting methods, together with ongoing efforts to improve related measurement metrics, are critically important—not only to the integrity of future carbon markets but for the growing number of corporations that have embraced environmental, social, and governance (ESG) programs and ambitious climate goals.

Task Force Process

To identify key challenges and develop pragmatic, actionable policy recommendations, the task force worked with BPC staff to hold a series of working sessions throughout 2021. Topics covered included:

1. The role of existing federal programs that target natural climate solutions
2. Quantification and monitoring challenges, especially for large-scale projects
3. The state of voluntary carbon markets and current approaches to quality assurance
4. Barriers, risks, and opportunities for addressing wildfire risks and protecting public lands
5. Policy considerations with respect to issues of land access, tenure, and ownership

BPC staff also convened a panel of leading scientific experts and technical advisors to advise the task force on the state of scientific understanding with respect to issues of quantification, durability, and effectiveness for natural climate solutions. These topics were explored in depth at two additional technical workshops that examined current understanding of the land-based carbon cycle and related implications for carbon accounting methods and policy design.

II. Policy Recommendations

With the benefit of insights and ideas generated over the course of multiple workshops and meetings, task force members reached agreement on 24 policy recommendations. The breadth of these recommendations reflects the range of actions we believe are necessary to realize the full potential of farm- and forest-based climate solutions. Several broad themes provide a framework for organizing our recommendations and implementing a comprehensive policy approach:

1. Increase investment in natural climate solutions through existing Farm Bill programs and offer pathways to new market opportunities for farmers, ranchers, and forest landowners.
2. Expand technical assistance for implementing natural climate solutions and address related workforce needs.
3. Strengthen the integrity of voluntary carbon markets and increase access to these markets.
4. Develop new public and private financial and insurance instruments that address barriers to the broad adoption of natural climate solutions.
5. Enhance resilience to wildfire, drought, insects and disease, and invasive species on a landscape scale.
6. Foster technology innovation in the agriculture and forestry sectors to make natural carbon solutions cheaper and easier to implement and to address measurement and monitoring challenges.

For policy recommendations that involve adaptations to existing programs, the task force also considered:

- What problem is the program designed to solve, and how well does it solve that problem?
- What climate mitigation benefits has the program provided to date?
- What is the current level of participation by agricultural producers and forest landowners?
- How cost-effective is the program in serving participants, addressing the problem, and delivering climate benefits?

For new policy recommendations, the task force asked:

- What problem is the policy designed to solve, and how well does the policy address that problem?
- What are the anticipated climate mitigation benefits of implementing the recommendation?
- What is the cost-effectiveness of the policy and/or program—i.e., what level of funding is necessary for effective implementation?
- What is the administrative and political feasibility of implementing the recommendation?

The passage of the Infrastructure Investment and Jobs Act (Infrastructure Act) in November 2021 affirmed ongoing bipartisan support for investing in the nation’s natural infrastructure to support economic development, restore ecosystems, and meaningfully contribute to climate mitigation. The bill allocates historic levels of funding—over \$6 billion—for forest restoration, hazardous fuels management, and wood products innovation, among other provisions that support natural climate solutions. Accordingly, our recommendations include a strong focus on policy implementation so that this and other recommended funding can be deployed quickly and effectively.

With the Infrastructure Act, upcoming Farm Bill negotiations in 2022, and robust dialogue happening among industry, the nonprofit sector and state, federal and tribal nation partners, we see tremendous momentum to advance a suite of policies that positions U.S. agriculture and forestry to achieve durable and effective climate solutions.

POLICY THEME 1: INCREASE INVESTMENT IN NATURAL CLIMATE SOLUTIONS THROUGH EXISTING FARM BILL PROGRAMS AND OFFER PATHWAYS TO NEW MARKET OPPORTUNITIES FOR FARMERS, RANCHERS, AND FOREST LANDOWNERS.

Recommendation 1A: Congress should substantially increase USDA funding (up to a doubling of current budgets) for key cost-share and incentive programs. Increased resources should be explicitly dedicated to pursuing greenhouse gas (GHG) reductions, carbon sequestration, and soil health improvements across large and small agricultural operations and diverse production systems, including livestock, dairy, and forests and wood products. Criteria for allocating funding should include specific provisions to ensure equitable participation, including historically disadvantaged and underrepresented landowners.

Needs addressed: USDA programs with the greatest potential to drive climate change outcomes in the land sector include but are not limited to the Environment Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), the Regional Conservation Partnership Program (RCPP), the Landscape Scale Restoration (LSR) program, the Farming Systems Project (FSP), and the Conservation Technical Assistance (CTA) program. These programs are underfunded and lack clear criteria to ensure maximum climate impact per dollar spent.

- Incentives are necessary to offset the financial and operational risks a producer or landowner may encounter by changing operations, especially for producers of color and indigenous, women, veteran, young, new, or historically underserved farmers that may lack access to financial capital.
- Increasing financial assistance and targeting that funding can address potential concerns that funds may be diverted from other priority wildlife, water quality, and natural resource concerns.

- USDA financial and technical assistance offerings currently lack clarity in how they support improved efficiency and reduced GHG emissions in livestock systems. The Conservation Innovation Grant On-Farm Trial Program and the USDA's Natural Resources Conservation Service (NRCS) Technical Assistance Program and practice standards should include support for testing new feed additives, breeding/herd genetics, and nutrition management.
- Forestry programs should be directed toward activities that have the greatest impact on net carbon gains through increasing sequestration and reducing emissions (e.g., wildfire), including carbon storage in wood products.

Climate and environmental benefits:

- According to the National Academies of Science, U.S. soils and forests have the potential to sequester about 500 million metric tons of carbon dioxide annually.
- Changes in feed composition and improved genetics that support digestive efficiency and productivity can directly or indirectly reduce methane emissions resulting from enteric fermentation in ruminant livestock.
- Forest landowners can expand and accelerate reforestation, adopt improved practices to enhance sequestration, and avoid GHG emissions by improving forest health and resilience.

Recommendation 1B: Congress should require USDA to establish specific goals and benchmarks for: 1) encouraging and tracking the adoption of climate-smart agriculture and forestry practices; and 2) quantifying the benefits of these practices on a national scale.

Needs addressed: Many USDA programs that span conservation, forestry, and rural development may be providing meaningful climate benefits, but these outcomes are not being tracked explicitly. Documenting these benefits would give farmers, ranchers, and forest landowners a better sense of the economic opportunities associated with natural climate solutions.

- Agencies, and programs within agencies, often track and evaluate program effectiveness without considering climate benefits.
- Practices may be adopted by landowners independent of USDA program incentives.

- USDA should integrate consistent quantification methods across programs and agencies within the food production and conservation and natural resources and environment mission areas.
- USDA signaled its intent to tackle these tracking and quantification challenges in its 90-Day Progress Report on Climate-Smart Agriculture and Forestry Strategy, noting that the lack of a consistent, robust tracking system could undermine incentives for the agriculture and forestry sectors to play a proactive role in helping to achieve key climate policy goals.

Climate and environmental benefits:

- Current national datasets are not sufficiently comprehensive to provide quantitative estimates of the total climate impacts and co-benefits that could be realized by adopting certain practices at a national level or even within USDA programs.
- A consistent approach to tracking the adoption of climate-friendly practices, quantifying carbon benefits, and periodically establishing goals and benchmarks will help USDA target its programs to achieve the greatest climate benefits and co-benefits.

Recommendation 1C: USDA should issue guidance on how its existing financial and technical assistance programs can support producers and landowners who might wish to participate in voluntary carbon and ecosystem markets or carbon-focused supply chain sustainability programs. Such guidance should give careful consideration to issues of permanence and additionality.

Needs addressed: Landowners often lack the capital and knowledge to evaluate, finance, and implement upfront changes to their operations that would allow them to participate in voluntary markets for carbon credits. This creates barriers to entry and increases transaction costs for all landowners, but the hurdles are especially high for smaller and underserved landowners and producers.

- Clarifying how existing technical and financial assistance programs can help landowners overcome these barriers, particularly including efforts to educate landowners about more efficient project aggregation models, is an important first step. For example, the \$6 billion-a-year Farm Bill conservation title could pull substantially more investment from private-sector ESG-driven demand.

- The Taskforce on Scaling Voluntary Carbon Markets, sponsored by the Institute of International Finance, estimates that U.S. demand for carbon credits could increase by a factor of 15 or more by 2030, and could be worth upward of \$50 billion in 2030.
- The administration could consider a range of strategies, including through guidance, field manuals, and other mechanisms, for facilitating landowner participation in voluntary ecosystem and carbon markets.
- A recent McKinsey report estimated that the annual global demand for carbon credits could reach up to 1,500-2,000 million metric tons of carbon dioxide by 2030.

Climate and environmental benefits:

- Assuming agriculture and forestry projects could capture as much as 25% of this global market, farm- and forest-based carbon dioxide sequestration could total 375-500 million metric tons per year.
- If durability and additionality concerns can be effectively addressed, policies can be designed to recognize “stacked” benefits from natural climate solutions. This would help incentivize activities that provide nonclimate environmental co-benefits like wildlife habitat, recreation amenities, and air and water quality.

Recommendation 1D: USDA’s Natural Resources Conservation Service (NRCS) should streamline its process for adopting new conservation practice standards, and coordinate requirements and processes across agencies to foster continued producer-led innovation in the adoption of climate solutions.

Needs addressed: Currently, producers and stakeholders must petition through local and state authorities, and ultimately at the national level, before a practice can gain interim status. NRCS then studies the practice for a minimum of three years before determining its validity.

- The current process prevents rapid adoption, testing, and evaluation of new, modified, or combined management practices that could contribute to climate solutions.
- NRCS should make changes to accelerate proactive investigation and implementation of new conservation practices and technologies, including conservation practices developed by producers working closely with industry, land grant universities, states, and other partners.

Climate and environmental benefits:

- Reducing barriers to participation in existing programs—whether those barriers are administrative, financial, or technical—will result in faster and more durable adoption of conservation practices that enhance carbon sequestration and improve air and water quality.

Recommendation 1E: USDA should expand existing measurement networks to better integrate relevant data from remote sensing systems and to include below-ground measurements of biomass, carbon, and other variables relevant for quantifying ecosystem change, carbon sequestration rates, and climate resilience.

Needs addressed: Expanding existing measurement networks, such as the USDA's National Resources Inventory (NRI) and the Forest Inventory and Analysis (FIA) program, will support higher-frequency, small-area estimation of biomass and soil carbon attributes at existing monitoring sites.

- Enhancing datasets that track above- and below-ground carbon stocks, supporting investments in measurement technologies (e.g., remote sensing) that enable more efficient data collection at the landscape scale, and ensuring that new analytical tools and models make maximum use of real soil carbon data will meaningfully accelerate progress toward more accurate carbon accounting.

Climate and environmental benefits:

- Accurately quantifying the changes in carbon sequestration rates, ecosystem health, and climate resilience that result from conservation practices can inform USDA's strategy to optimize climate and other environmental co-benefits during the process of scaling up its programs.

POLICY THEME 2: EXPAND TECHNICAL ASSISTANCE FOR IMPLEMENTING NATURAL CLIMATE SOLUTIONS AND ADDRESS RELATED WORKFORCE NEEDS.

Recommendation 2A: USDA and the Cooperative Extension System should recruit private-sector partners—including (but not limited to) agricultural retailers, cooperatives, seed and feed companies, forest landowners, forestry consultants, procurement foresters, and nonprofits—and enlist these partners in integrated efforts to deploy extension services and other USDA capacities to help train, demonstrate, and disseminate information on climate-smart practices and programs.

Needs addressed: Farmers, ranchers, and forest landowners often turn to private-sector, state, academic, nonprofit, and other on-the-ground organizations for information about new practices that are helpful for climate adaptation, mitigation, and resilience.

- The Cooperative Extension System already partners with trusted advisors to maximize reach, enhance program delivery, and expand public/private data sharing opportunities.
- Partnerships with existing networks can be used to expand access to and engagement with USDA programs. This strategy is especially effective for communities whose historical experiences with federal government programs may have reduced their level of trust.
- Community organizations that act as liaisons between the federal government and historically underserved producers and landowners can lend credibility to USDA programs.
- Programs such as the U.S. Forest Service Climate Change Response Framework provide innovative models for linking these networks to USDA technical assistance services across multiple states, creating dynamic technical assistance and learning networks for climate-smart practices.

Climate and environmental benefits:

- Increased demonstration and information dissemination regarding climate-smart practices and programs can lead to greater and more effective uptake of these practices and more informed decision making that maximizes environmental co-benefits and ensures long-term sustainability.

Recommendation 2B: USDA should ensure effective implementation of technical assistance programs to increase natural climate solutions' adoption by tribes and historically underrepresented producers and landowners. This should include a specific focus on the new Farm Service Agency's (FSA) Heirs' Property Relending Program, enabling organizations and credit providers with long histories of working with underserved populations to participate in program delivery.

Needs addressed: Historically disadvantaged and underrepresented producers and landowners face greater barriers to participation in conservation programs.

- Ensuring equitable access to USDA programs is necessary for better conservation and climate outcomes, and dedicated funding for outreach and technical assistance can help achieve this goal.
- Technical assistance and outreach should be provided throughout the entire process, from pre-application to implementation and maintenance of climate-smart practices.
- USDA should enable organizations with long histories of working with underserved populations to be integrally involved in technical assistance and program delivery. For example, USDA should help community-based organizations navigate the required certification process (e.g., cooperative credit unions that are not registered as community development financial institutions should receive support to achieve certification) for the FSA Heirs' Property Relending Program.

Climate and environmental benefits:

- Ensuring equitable access to USDA programs is necessary to scale up natural climate solutions; it will also lead to greater conservation efforts and larger climate benefits.

Recommendation 2C: NRCS should establish more innovative partnerships and expand the network of technical service providers (TSPs) to include certified crop advisors, state foresters, third parties specialized in delivering technical assistance to socially disadvantaged and tribal producers and landowners, and other trusted partners to bolster the overall delivery of technical assistance for climate-smart practices.

Needs addressed: Additional technical support is needed for producers and landowners to implement climate-smart practices at scale.

- TSPs and innovative partnerships between NRCS and third parties can be leveraged to expand access to technical experts who can work with producers and landowners on conservation planning and implementation.
- Technical assistance from trusted partners and on-the-ground support are critical to help farmers, ranchers, and forest landowners overcome administrative barriers that impede the adoption of climate-smart practices.
- TSPs are especially effective at providing outreach and assistance to socially disadvantaged groups who have historically been underserved.

Climate and environmental benefits:

- Expanding innovative partnerships and the TSP network would enable more producers and forest landowners to participate in USDA programs, leading to greater conservation efforts and larger climate benefits.

Recommendation 2D: Congress should bolster existing education and workforce development opportunities and create new ones—including extension, scholarships, and programs focused on historically underrepresented students and workers—to train a new generation in natural climate solutions.

Needs addressed: The Congressional Budget Office expects that the U.S. workforce will not fully recover from the COVID-19 pandemic until 2024; among workers, historically underrepresented groups have experienced the worst of the pandemic's economic impact. Meanwhile, the country's public lands, including national parks and wildlife refuges, have \$20 billion in deferred maintenance needs.

- Increased funding for education and workforce development in conservation could help individuals—especially those most impacted by the pandemic—get back to work addressing natural resource management backlogs and public lands restoration needs.
- A new generation of TSPs could be trained in climate-smart agriculture and forestry, and part-time employment opportunities could be provided for retired professionals.
- Existing programs or institutions that provide workforce development opportunities for historically disadvantaged groups include the Rural Workforce Innovation Network, AmeriCorps, the 34 tribal colleges, universities, and tribal workforce development programs, and the 19 historically Black land grant universities (referred to as “1890 institutions”).
- A new version of a conservation-focused jobs corps should be considered that goes beyond shovel-ready projects and incorporates training in new skill sets and innovative technology.

Climate and environmental benefits:

- Workforce development programs and a conservation-focused jobs corps could support a variety of projects, including planting trees to sequester carbon, thinning and clearing brush to mitigate wildfires, implementing forest management practices to improve resilience, restoring natural habitats, and fighting wildfires.

Recommendation 2E: USDA should enhance the collection, interoperability, and sharing of economic and physical data to improve its ability to deliver climate-related technical assistance.

Needs addressed: Farmers and forest landowners currently experience significant administrative burdens when they engage with USDA programs. Often, they have to enter the same data multiple times for different programs.

- Third parties, such as conservation districts and TSPs, can offer more up-to-date and comprehensive assistance by drawing on available data to prepopulate forms or help answer questions.
- Public reporting of racial inequities in program participation and profitability should be prioritized to capture underreported barriers to success for historically excluded producers.

- It remains challenging to quantify the climate, ecosystem, and economic impacts of conservation practices on a landscape scale. Developing data standards—with respect to setting field boundaries, for example—can improve interoperability and sharing of data across datasets.
- Integrating multiple datasets within a single “data warehouse” that offers searchable registries would enable producers, landowners, independent and academic researchers, and USDA staff to better assess the multiple, overlapping benefits of conservation practices.
- The USDA Farm Production and Conservation mission area is well-positioned to lead this integration effort.

Climate and environmental benefits:

- Easing administrative burdens can reduce a key barrier to participation in USDA programs, leading to greater conservation efforts and larger climate benefits.

Recommendation 2F: USDA should strengthen its data, modeling, and technical tools, such as COMET-Farm, COMET-Planner, LandPKS, DairyGEM, GRACEnet, APEX, Rangeland Analysis Platform, CART, and FIA, as well as its forest decision support tools, to allow more producers, landowners, and TSPs to quickly and easily estimate the impacts of adopting climate-smart practices.

Needs addressed: Confidence and certainty remain key challenges for existing methods of estimating net GHG emissions and carbon sequestration on a landscape scale. Current methods for on-the-ground measurement are time intensive and often cost-prohibitive for producers and forest landowners.

- More reliable models and improvements in other predictive tools can reduce the administrative and technical burdens faced by potential participants both in government programs and private markets.
- Accurate measurement of carbon benefits and other environmental outcomes can help producers and landowners maximize these benefits by informing their operational and management decision making.
- Data inputs and more effective decision support tools—matched to user needs and use cases—can help ensure that results are delivered in a timely, efficient, and rigorous manner.

Climate and environmental benefits:

- Accurate estimates of the impacts of climate-smart practices will allow producers and landowners to maximize environmental co-benefits.

POLICY THEME 3: STRENGTHEN THE INTEGRITY OF CARBON MARKETS AND EXPAND ACCESS TO THESE MARKETS.

Recommendation 3A: Congress should reduce barriers to entry for voluntary carbon markets and improve market integrity by passing the Growing Climate Solutions Act (GCSA), the Rural Forest Markets Act (RFMA), and other related legislation.

Needs addressed: Scaling climate-smart agriculture and forestry practices requires financial rewards that outweigh the economic risks that producers and forest landowners incur by changing operations.

- Financial instruments such as loans, loan guarantees, direct payments, and grants can help counter the otherwise prohibitive costs of monitoring, reporting, and verifying climate benefits for small producers and forest landowners.
- The GCSA addresses this barrier by empowering USDA to provide transparency, legitimacy, and informal endorsement of third-party verifiers and technical service providers, who are vital to providing quality criteria and guiding principles.
- The RFMA establishes a program that would offer guaranteed federal loans to help small and family forest landowners generate and sell credits for stored carbon. Small and family-owned forests account for more than one-third (36%) of U.S. woodlands.
- By offsetting upfront costs, the RFMA leverages private capital to scale natural climate solutions while creating forestry jobs and potential new revenue streams for small forest landowners. Providing quality assurance for credits linked to farm- and forest-based carbon sequestration and GHG reductions remains challenging, limiting investor confidence.

- The advisory committee established by the GCSA could provide necessary clarity, transparency, and standardization to credit buyers, project developers, and landowners, reducing confusion in the marketplace.
- Carbon offset projects should not exacerbate existing inequities experienced by frontline communities. USDA efforts to support climate-smart agriculture should be consistent with USDA's Equity Commission principles and guidelines.

Climate and environmental benefits:

- Passing the RFMA would promote the adoption of voluntary land management practices that store carbon and provide other nonclimate environmental co-benefits like wildlife habitat, recreation amenities, and air and water quality.
- Voluntary carbon markets can provide an additional revenue stream to producers and landowners who implement climate-friendly practices.
- Additional revenues can help landowners keep land for conservation purposes that may otherwise be sold and developed.

Recommendation 3B: USDA should use the Commodity Credit Corporation (CCC) to pilot projects that promote climate-smart practices by lowering transaction costs for producers, leveraging current carbon markets and supply chain initiatives, promoting innovation, and quantifying benefits.

Needs addressed: A combination of high transaction costs, challenges with respect to scale and aggregation, and a lack of clear standards for quantification and monitoring has served to prevent many producers from accessing current markets for carbon credits or participating in supply-chain sustainability initiatives. The CCC offers a flexible financing mechanism for overcoming barriers to market entry, reducing risks for buyers and sellers, and strengthening quantification systems.

- Pilot projects should allow for diverse financing, incentive, and insurance structures with the goals of reducing risks and entry costs for participating landowners and enhancing investor confidence in emerging carbon markets.

- USDA can complement existing market efforts by reducing market entry costs for certain capital- and time-intensive climate-smart agriculture and forestry practices; supporting efforts to aggregate projects among multiple landowners and land operators; and pursuing partnerships that streamline and reduce quantification, monitoring, and verification costs.
- Pilot projects can also be used to test new tools such as loans, bond and price guarantees, insurance and buyer-of-last-resort mechanisms, and other strategies for meeting the financing and risk management needs faced by purchasers of carbon offsets and verified emission reductions.
- Such efforts should focus on enhancing landowner participation, particularly among small or historically disadvantaged landowners.

Climate and environmental benefits:

- Preferential support could be given to projects and practices that provide other, nonclimate environmental benefits like improvements in wildlife habitat, recreation amenities, and air and water quality.
- Early adoption of practices that reduce net greenhouse gas emissions will lead more farmers and forest landowners to participate, resulting in greater carbon benefits over time.
- By supplementing payments from existing USDA conservation programs with the opportunity to generate revenues from carbon credits, USDA can make enrollment in existing conservation programs more attractive and generate additional environmental co-benefits.

Recommendation 3C: USDA, the State Department, and other appropriate federal agencies should convene high-level working groups to advance public-private partnerships for enhancing trading infrastructure and developing insurance and structured finance products for voluntary carbon markets.

Needs addressed: Several challenges confront emerging markets for voluntary carbon credits, including a lack of transparency and liquidity, incomplete risk management mechanisms, and a lack of financing that would allow supply to respond to market demand.

- The federal government can help address these barriers by exploring risk management policies, such as the development of a uniform trading infrastructure that would allow market participants to better understand price and liquidity.

- Structured financing can help attract capital to develop projects that meet requirements for additionality, permanence, and avoided leakage.
- For example, the Rural Forest Markets Act would provide a federal loan guarantee to back private investments, supporting innovative projects that help small forest landowners develop climate solutions.
- Improving market functionality for voluntary carbon credits can attract investors and increase incentives (in the form of higher carbon prices) for producers and landowners to participate in activities that reduce net GHG emissions.

Climate and environmental benefits:

- Voluntary carbon markets provide an additional revenue stream to producers and landowners who implement climate-friendly practices. Often these practices have environmental co-benefits.
- Additional revenues can help landowners keep land for conservation purposes that may otherwise be sold and developed.

POLICY THEME 4: DEVELOP NEW PUBLIC AND PRIVATE FINANCE AND INSURANCE INSTRUMENTS THAT ADDRESS BARRIERS TO THE BROAD ADOPTION OF NATURAL CLIMATE SOLUTIONS.

Recommendation 4A: Congress should adopt a tax credit (similar to the Section 45Q tax credit for carbon capture and storage) that provides financial incentives for landowners to undertake a wide range of ecologically appropriate agriculture- and forest-based carbon sequestration activities.

Needs addressed: In many cases, agricultural producers, forest landowners, and companies lack sufficient financial incentives to justify investment in the operational changes necessary to increase carbon sequestration and reduce GHG emissions.

- A potential tax credit like 45Q could be designed using a performance or practice-based model, compensating landowners for carbon benefits and enabling credit transferability.
- Transferable tax credits have been used successfully in other policy contexts to incentivize widespread adoption of new technologies or practices.

Climate and environmental benefits:

- Expanding incentives for climate-friendly activities will remove more carbon dioxide from the atmosphere through soil and forest management practices and will mitigate additional GHG emissions.

Recommendation 4B: USDA's Risk Management Agency should conduct a comprehensive study of the impacts of conservation practices on yields; yield losses attributed to drought, flooding, and other extreme weather events; and insurance payouts under the Federal Crop Insurance Program. Findings from this study should be used to develop incentives for the adoption of practices that have been demonstrated to reduce losses and that offer co-benefits in terms of carbon sequestration and emission reductions.

Needs addressed: Proposed changes to the Federal Crop Insurance Program (FCIP) would build on the existing program and would not reduce current benefits.

- As a risk management tool, crop insurance helps reduce potential financial liabilities that may prevent some producers from adopting climate-friendly practices.
- These incentives could be modeled after successful state programs in Illinois, Iowa, and Indiana that offer a \$5-per-acre discount on crop insurance premiums for eligible farmers enrolled in FCIP who implement cover crops. USDA's Pandemic Cover Crop Program offers a similar \$5-per-acre discount on premiums for the 2021 crop year.

Climate and environmental benefits:

- Beyond cover crops, USDA should study and develop incentives for other practices that demonstrate risk reduction and climate mitigation benefits.

- Lower financial risk can encourage greater uptake of climate-friendly practices that can improve climate resilience and provide nonclimate environmental co-benefits.

Recommendation 4C: Congress should assess and develop new incentives—such as cost shares, state block grants, and tax reform—to improve land access, tenure, and leasing, especially for new, small, and historically underserved landowners and producers, and owners of heirs' property and fractionated tribal lands.

Needs addressed: Several factors limit the amount of farmland that is available to producers at an affordable price and with secure terms. These constraints are especially acute for new, small, and historically underserved farmers. By developing new incentives, USDA could help address the major financial, social, and cultural obstacles that limit secure access to affordable farmland. For example:

- Federal farm programs and disaster aid often require longer-term leases, meaning that farmers with short-term leases or informal lease agreements are unable to participate in these programs.
- Producers with heirs' property or fractionated land may be unable to access financial assistance or exercise decision-making authority regarding land management or sale.
- Capital gains taxes on the sale of farmland discourage farmers from selling land assets when they retire, contributing to a limited supply of land for beginning producers.
- Succession planning can be expensive and time consuming, and often requires costly legal counsel.
- Loan programs often require collateral that small, beginning, and historically underserved farmers may lack.

Climate and environmental benefits:

- Enhancing access to resources can help defray the operational and financial risks incurred by producers and landowners when they incorporate climate-smart practices, and thereby encourage the adoption of practices that enhance climate resilience and environmental health.

Recommendation 4D: Provide a one-time payment to early adopters in connection with new or enhanced USDA program support for climate-smart agriculture and forestry practices.

Needs addressed: Early adopters of climate-smart practices should be rewarded as a way to align incentives, acknowledge past commitments, and promote continued stewardship.

- This is especially critical for small-scale producers who have traditionally relied on climate-smart practices but have been excluded from access to credit and related financial services that would help them scale up these practices.
- Rewarding early adopters via a one-time payment can help support producers through the transition from participating in practice-based programs to participating in outcomes-based programs.
- NRCS could define early adopters based on the number of practices implemented and their duration; payments could be supported by a one-time appropriation until expended; and participants could have the opportunity to certify past practices from a combination of satellite imagery records, participation in NRCS and other conservation programs, or through direct monitoring.
- USDA could publish a list of practices (e.g., optimized nutrient management) that reduce net GHG emissions and achieve other environmental benefits that are deemed eligible for additional “carbon plus” payments.

Climate and environmental benefits:

- Rewarding early adopters for the climate and environmental benefits they have already achieved can encourage them to maintain these practices over the long term.

POLICY THEME 5: ENHANCE CARBON STORAGE CAPACITY AND RESILIENCE TO WILDFIRE, DROUGHT, INSECTS AND DISEASE, AND INVASIVE SPECIES ON A LANDSCAPE SCALE.

Recommendation 5A: Congress should pass comprehensive legislation to modernize, expand, and fund the network of public and private seed collections and tree nurseries needed to scale up ecologically appropriate afforestation and reforestation efforts.

Needs addressed: The nation's nurseries are not equipped to meet skyrocketing demand for tree seedlings. As wildfires become more prevalent and devastating, reforestation efforts will need to be scaled up to restore burned areas and limit further deterioration. Estimates indicate that meeting the reforestation need of 64 million acres by 2040 would require more than doubling current output from tree nurseries, from roughly 1.3 billion seedlings per year to 3 billion.

- Greater federal investment is needed via grants, loans, and cost-share programs to scale up nursery capacity on state, tribal, and private lands.
- Additional barriers, including workforce needs and contracts that are too small and short-lived to attract investment, need to be addressed.
- Federal agencies need to prioritize reforestation and plan accordingly to help establish base demand for all forests, regardless of ownership, and develop purchase agreements that create predictability for producers.

Climate and environmental benefits:

- Reforestation in the U.S. has an estimated potential to increase carbon sequestration by upward of 300 million metric tons of carbon dioxide per year. This potential is illustrated by tools like the ReforestationHub.org.
- Forest restoration delivers many benefits, including reduced wildfire risk, improved ecological and watershed health, increased carbon sequestration, and rural economic stimulus from the use of forest restoration byproducts.

Recommendation 5B: The administration should establish an all-of-government approach to wildfire resilience that prioritizes, streamlines, and increases interagency spending on management practices that promote healthy and resilient forests and grasslands, with a special emphasis on high-value conservation and carbon storage lands. An interagency body should liaise and coordinate resilience investments across local, state, tribal nation, and federal jurisdictions.

Needs addressed: Spending on wildland fire resilience has failed to keep pace with the rising costs of wildfire suppression. Climate change contributed to a historically dry period for the southwestern U.S. in recent decades, making devastating wildfire seasons longer and more frequent. Certain forest species are struggling to adapt to a changing climate, creating challenges for restocking. Funding needs to address the most catastrophic fire events are estimated to total \$5 billion to \$6 billion per year.

- New strategies should focus on better prioritization of at-risk firesheds and include the development of outcome-based performance measures.
- A paradigm shift must occur to adopt program funding and delivery mechanisms for resiliency.
- Enhanced coordination among federal, state, local, and tribal government partners is needed, which the recently established Wildfire Resilience Interagency Working Group seeks to address.

Climate and environmental benefits:

- A proactive approach to wildfire management can minimize the negative climate and environmental effects of wildfires, including the release of stored carbon back into the atmosphere, negative impact on air and water quality, and destruction of wildlife habitats.

Recommendation 5C: Congress should fund a new cross-boundary rangeland health initiative aimed at improving soil health, carbon sequestration, invasive species management, and other conservation outcomes.

Needs addressed: A new rangeland health initiative could also be established by the administration and should be coordinated by NRCS, the U.S. Forest Service, and the Bureau of Land Management, in coordination with other relevant agencies. Modeled after efforts like the Joint Chiefs' Landscape Restoration Partnership Initiative, which pairs NRCS EQIP funding with Forest Service funds to achieve cross-boundary forest restoration efforts, a new initiative should seek to align public and private rangeland stewardship efforts in priority landscapes.

- Such an initiative can facilitate cross-boundary coordination to achieve landscape restoration and carbon storage goals.
- Project developers could seek to partner with conservation districts, TSPs, the National Grazing Lands Coalition, and other local landowner-led associations.
- The initiative could be part of a new North American Grasslands Conservation Act modeled after voluntary incentives for private lands restoration in the current North American Wetlands Conservation Act.
- The scale of restoration efforts would be informed by ecological, geographical, and political boundaries and characteristics.

Climate and environmental benefits:

- Under specific management conditions, rangeland soils can sequester significant amounts of carbon dioxide.
- Co-benefits of increasing carbon storage on rangelands include improved productivity, resilience, soil quality, and ecosystem diversity.

POLICY THEME 6: FOSTER INNOVATION IN THE AGRICULTURE AND FORESTRY SECTORS TO MAKE NATURAL CLIMATE SOLUTIONS CHEAPER AND EASIER TO IMPLEMENT.

Recommendation 6A: Congress should provide increased funding across the USDA research enterprise (including FFAR) to enhance collaboration across federal agencies (especially DOE/ARPA-E, NIST, USGS, and NSF), as well as with universities and the private sector, to improve the whole innovation life cycle for natural climate solutions, from research and development to wide-scale commercialization of new technologies for assisting with long-term management.

Needs addressed: Wide-scale commercialization can lower the cost of innovative, climate-smart technologies, making them more affordable for farmers, ranchers, and forest landowners interested in implementing natural carbon solutions.

- Integrating private-sector, university, and federal government research efforts will support innovation to meet global food security and renewable resource demands.
- Lab-to-market pipelines are needed to bridge the “valley of death” for new technologies and practices that reduce emissions or increase carbon sequestration. Improved and lower-cost technologies are also needed for monitoring and verification.
- Regionally integrated efforts can help incubate new ideas and bring them to market based on landowner needs and emerging market opportunities. Such efforts can leverage the resources and capacities of land grant universities, USDA Climate Hubs, and extension offices.
- Research is needed to target knowledge gaps in measuring climate and conservation outcomes associated with forest, ranch, and farmland management practices. Key topics include life cycle carbon accounting for forest management and wood products, carbon flows and storage in the biosphere, and photosynthetic science.

- Investments implemented in collaboration with universities and the private sector can drive resources toward expanding rural infrastructure and access to broadband.

Climate and environmental benefits:

- Building on existing innovation programs, USDA can help accelerate the development and deployment of technologies for reducing agriculture and forestry emissions and reliably quantifying carbon storage and sequestration. These technologies are key to scaling natural carbon solutions and to realizing concomitant ecosystem co-benefits.

Recommendation 6B: The Food and Drug Administration should expedite the approval of safe feed additives and support further innovation to reduce emissions from enteric fermentation in livestock operations.

Needs addressed: Feed additives are a promising tool for reducing methane emissions from ruminant livestock, but regulatory processes are adding years to the timeline for making these additives available to producers. Lags in approval are likely also impacting investments in related research and development in the U.S.

Climate and environmental benefits:

- Streamlining the FDA approval process would allow safe, new products to get into the hands of producers faster and send signals to the private sector in making R&D decisions. Changes in feed composition can directly or indirectly reduce methane emissions from enteric fermentation in ruminant livestock.

Recommendation 6C: Integrate siloed programs across USDA and explore ways to support emerging markets for innovative wood products through new incentives for domestic manufacturers, federal procurement across executive branch agencies, and other options.

Needs addressed:

- The United States lags Canada, Australia, the United Kingdom, and many European nations in commercializing innovative wood products such as mass timber building systems, wood fiber insulation, and wood fiber nanotechnologies.

- Building from the existing authorizations in the Timber Innovation Act, USDA and Congress should identify a strategy to integrate funding for R&D, manufacturing, market adoption, and promotion across the U.S. Forest Service (including State and Private Forestry and the USDA's Forest Products Laboratory), the National Institute of Food and Agriculture, the Rural Business-Cooperative Service, and the BioPreferred Program.
- USDA should also support federal procurement of innovative wood products for appropriate applications through partnerships with the Department of Defense, the General Services Administration, and other federal agencies.

Climate and environmental benefits:

- Markets for these technologies hold promise for increasing carbon storage in long-lived wood products, while supporting healthy forest management.
- Increasing demand for embodied carbon further reduces the use of materials with higher emissions profiles.

References

Throughout the task force process, task force members and BPC staff drew on the expert insights of a wide range of organizations and coalitions who are likewise exploring emerging policy pathways for advancing natural climate solutions in the United States. The considerable efforts of these groups underscore growing appreciation for the unique and invaluable role that agricultural producers and forest landowners can play in mitigating climate change. Our recommendations build on the scientific findings and policy needs identified by these groups:

Coalitions and Organizations:

- American Farmland Trust
- American Forest Foundation
- American Forests
- Brookings
- Farm and forest technical advisors
- Food and Agriculture Climate Alliance
- Forest-Climate Working Group
- Land for Good
- Land O'Lakes
- National Academies of Sciences, Engineering, and Medicine
- National Association of State Departments of Agriculture
- National Young Farmers Coalition
- Open Technology Ecosystem for Agricultural Management
- Society for Range Management
- Taskforce on Scaling Voluntary Carbon Markets
- The Nature Conservancy

Reports, Research Articles, and Tools:

- AGree Economic and Environmental Risk Coalition Comments to USDA Request for Public Comment: [Regulations.gov](https://www.regulations.gov)
- American Farmland Trust, Land for Good, National Association of State Departments of Agriculture, and National Young Farmers Coalition: [Tax Reform and Farmland Access: Capital Gains Tax Changes to Support the Next Generation in Agriculture](#)
- American Forests and The Nature Conservancy: [Reforestation Hub, Reforestation Opportunities for Climate Change Mitigation](#)
- BPC: [Leveraging Outreach and Technical Assistance to Scale Natural Climate Solutions](#)
- Fargione, J., et al.: [Challenges to the Reforestation Pipeline in the United States](#)
- Fargione, J., et al.: [Natural Climate Solutions for the United States](#)
- Institute of International Finance: [Taskforce on Scaling Voluntary Carbon Markets](#)

- McKinsey: [A Blueprint for Scaling Voluntary Carbon Markets to Meet the Climate Challenge](#)
- Microsoft: [Criteria for High-Quality Carbon Dioxide Removal](#)
- National Academies of Sciences: [Negative Emissions Technologies and Reliable Sequestration: A Research Agenda](#)
- National Young Farmers Coalition: [Land Policy Report](#)
- OpenTEAM Comments to USDA Request for Public Comment: [Regulations.gov](#)
- USDA: [90-Day Progress Report on Climate-Smart Agriculture and Forestry](#)
- USDA: [Agriculture Innovation Agenda](#)
- USDA Rural Development: [Rural Workforce Innovation Network](#)



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