



OPPORTUNITIES TO MITIGATE CLIMATE CHANGE WITH **FORESTS AND WOOD**

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NATIONAL ASSOCIATION OF STATE FORESTERS

59 MEMBERS, ONE VOICE

Established in 1920, the National Association of State Foresters represents the directors of forestry agencies in the states, U.S. territories, and the District of Columbia.

We advocate for federal legislation and national policies that promote the health, resilience, and productivity of forests and the professionals that conserve, enhance, and protect them.



WHAT STATE FORESTERS DO


- **Deliver technical assistance to forestland owners.** In 2018, they provided nearly 270,000 technical assists to landowners.
- **Deliver technical tree care and planning assistance to communities.** In 2018, 8,502 communities received this assistance from state forestry agencies.
- **Employ over 27,000 professionals nationwide.**



WHAT STATE FORESTERS DO

- **Spent \$2.9 billion in 2018.** The majority of these expenditures (68%) are related to wildfire prevention, mitigation, and suppression.
- **Responsible for wildfire protection on 1.59 billion acres.** State forestry agencies trained 62,000 firefighters, provided funding for fire suppression equipment, and helped establish and/or expand 20,000 volunteer fire departments in 2018.





1. **HOW** carbon is sequestered in forests and released through disturbance

2. **WHAT** we can do to minimize disturbance and maximize the carbon storage capacity of our forests

3. **WHERE** new wood markets exist and how they can help us maximize the substitution effect

4. **HOW** we can help landowners manage their forests for carbon benefits



The Natural Boom & Bust Cycle of Forest Carbon

Carbon **uptake**
& **storage** (growth)

Carbon **uptake** &
storage (re-growth)

CARBON

Carbon **release**
(fire)

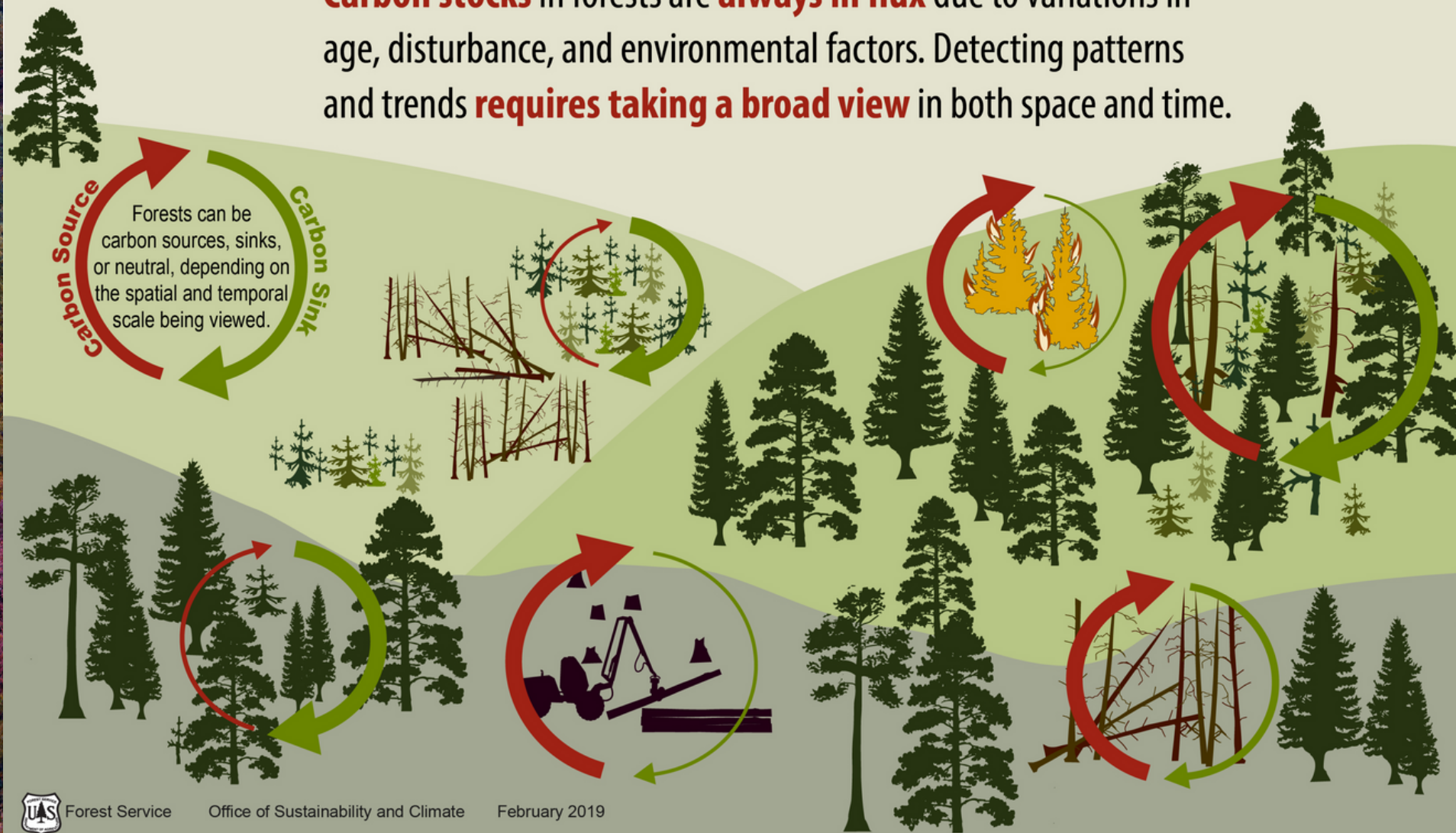
Carbon **release**
(decomposition) & **storage**
in dead trees

Below-ground carbon **storage**
(in roots & soil) is about 50% of forest carbon



A spatial and temporal view | **Carbon in Time and Space**

Carbon stocks in forests are **always in flux** due to variations in age, disturbance, and environmental factors. Detecting patterns and trends **requires taking a broad view** in both space and time.





The good news: U.S. forests sequester 600-700 million metric tons of greenhouse gas (GHG) equivalents annually.

The bad news: The U.S. produces about 6,500 metric tons of greenhouse gas equivalents annually. America's largest carbon sink, forests and forest products, currently offset about 11% of U.S. GHG emissions.

Good news, again: We can sequester more carbon in our forests and with forest products



Active Forest Management



Forested acreage in the U.S. has been increasing for several decades, and now stands at over 800 million acres (or about one-third of the land area of the U.S.).

From 1976 to 2016, the annual mortality of standing timber in the U.S. more than doubled due to over maturity and increases in wildfire, insect infestations, and disease.

A changing climate also represents a threat (drought, flooding, extreme weather) to forest health.



THE CARBON BENEFITS OF FOREST MANAGEMENT

Active forest management (which includes harvesting trees) promotes forest health and wildfire resiliency by increasing the growth rates of forests and minimizing tree mortality. It also maintains diverse wildlife habitat and landscapes for recreation.



Carbon sequestration is ONE OF MANY valuable benefits that forests provide.



Carbon forest management MUST include the harvesting of trees in order to maximize the amount of carbon forests can draw out of the atmosphere.





I. Younger trees, growing as fast as they ever will, sequester more additional carbon per year than older, slower growing trees

II. All tree species have an expected lifespan, some much longer than others, but as they approach the age of over-maturity, they become carbon emitters as portions die and decay

III. Active management can harvest those trees before that point and convert a portion of the volume into a wood product that continues to retain carbon



IV. Increasing the active management of forests can reduce the risk of catastrophic wildfire. Where wildfire risk is not sufficiently mitigated:

- Wildfire suppression operations are much more expensive
- Carbon emissions can be substantially increased
- Local communities are negatively affected
- Ecosystems can be permanently altered and store less carbon over the long-term as a result.



Afforestation and Reforestation



Afforestation is the establishment of a forest where a forest hadn't been.

Reforestation is the replanting trees in areas that have been affected by natural disturbances like wildfires, drought, and insect and disease infestations – and unnatural ones like timber harvesting and land development.



Afforestation and reforestation have limitations.

One analysis showed that an additional 50 million tons of GHG emissions could be mitigated by reforesting approximately 8 million acres.

At an average of 500 seedlings per acre, planting 8 million acres would require 4 billion seedlings.

State-owned tree nurseries would have to increase their annual production of seedlings by 400% over ten years to meet that production level and achieve an additional 0.7% of annual carbon emissions offset.



- **We don't have the necessary nursery capacity**
- **We don't have the necessary labor for planting billions of additional seedlings annually**
- **We don't have the space (or demand for supply) necessary to plant billions of new trees**
- **Trees, especially in urban settings, demand a lot of costly maintenance, particularly in the first two years**
- **We don't have great ways of quantifying carbon benefit based on the number of seedlings planted**



Forest Products





Steel and cement used in residential and commercial building construction account for 11% of U.S. GHG emissions.

Utilizing wood in construction not only ensures that carbon sequestered in the lumber remains stored, it also replaces the use of carbon-intensive materials, in effect eliminating carbon emissions.



CROSS-LAMINATED TIMBER

CLT resists compression and is exceedingly strong, even when subjected to fire, earthquakes, and explosions.

CLT panels are prefabricated and assembled to size off-site, so CLT building projects can be completed in half the time with less noise and fewer traffic impacts than projects that rely on traditional construction materials.

CLT buildings store carbon. The carbon footprint for a CLT building is up to 75% lower than traditional constructed buildings of the same size.



OTHER EMERGING MARKETS

Cellulosic biofuels. Transportation accounts for about 30% of GHG emissions in the U.S.

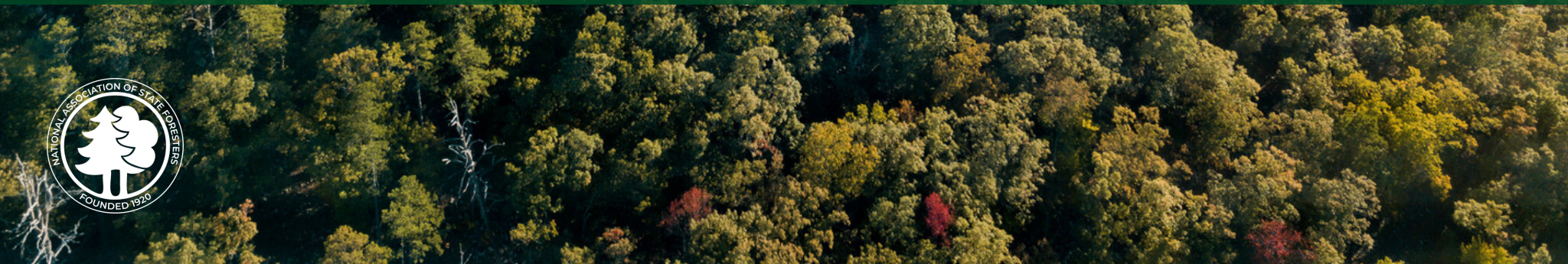
Biochar. Substituting biochar for 1% of the diet of cattle can lead to a 10% reduction in their methane emissions. It can also increase soil fertility, strengthen polymers and concrete, and be used as a cost-effective method for filtering water

Urban wood utilization. One of many benefits provided urban and community forests





Private forests in the U.S. produce more than 90% of the nation's wood and paper products. They support 2.4 million jobs (and \$98.7 billion in payroll) and contribute to \$281 billion in timber sales, manufacturing, and shipping each year.



CREATING A CARBON OPTION...



NATIONAL ASSOCIATION OF STATE FORESTERS
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Dear Fellow State Foresters:

Mitigating the effects of climate change is one of the greatest policy challenges facing our country and the world today. Policies and programs are being developed at every level to regulate and/or incentivize climate-smart decision making. Forests, which are responsible for absorbing approximately 12% of U.S. carbon emissions annually, are a critical piece of these policy conversations.

Private landowners own 60% of the nation's forests. Their forests have significant potential to be a carbon solution, not only in the eyes of state foresters, but to policymakers, NGOs, and private corporations. State managed forests also have potential, particularly as a model for forest carbon management.

Because our primary mission is to ensure the nation's state and private forests are healthy and remain intact, we are on the frontline of the forest carbon issue.

Keeping forests as forests—and accruing carbon benefits—necessitates thoughtful management to mitigate insect, disease, and wildfire threats. State forestry agencies deliver technical and financial assistance to landowners so that they may understand their management options and meet their own management objectives. The option of managing for carbon requires additional expertise at the state forestry agency level to best serve landowners and our nation's forests.

The NASF recently published a policy paper on climate change, "[Enhancing Forest Resilience and the Role of Forests in Dealing with Climate Change](#)," which offers recommendations for increasing carbon storage, improving forest biomass utilization, and mitigating the effects of climate change with federal forestry programs.

This document is meant to supplement that paper and serve as a practical, educational resource for your agency staffs. It also includes recommendations for state forestry agencies as they assist forest landowners in both understanding their carbon market options and including carbon in their management goals.

It is broken down into three sections:

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- Recommendations for state forestry agencies related to forest carbon,
- Strategies for using carbon messaging,
- An overview of carbon market terms and concepts, and
- A primer on existing carbon development programs, including those sponsored by states





Non-working forests are more likely to be developed and/or converted to other land uses. Climate-smart forestry isn't possible without keeping forests as forests and keeping them healthy.



SWITCHING GEARS:

1. **WHY** a basic understanding of forestry is fundamental to forest carbon communications
2. **WHAT** messaging works
3. **HOW** to deliver messaging to different audiences





ULTIMATE GOALS:

Increase awareness

Inspire trust



STRATEGIC MESSAGING IS VALUE MESSAGING.

Strategic messaging communicates the value of an idea (or a product) by describing the solution to a problem.



Create messages that resonate with your target audiences



Determine what you hope to accomplish, THEN what you will communicate



Work your plan for building, engaging, and maintaining your audience(s) with value-based communications





FOUNDATIONAL FORESTRY MESSAGES



People are a part of natural forests. The myth of a “pristine” unmanaged forest is neither accurate or desirable for carbon sequestration.



Poor land management CAN decimate the biodiversity and ecosystem services of forests. But that's not silviculture. Modern forestry is science-based and practice-informed.



People can trust foresters and forestry professionals. They are trained and dedicated, and they share your values.



PUTTING THE PIECES TOGETHER... ON SOCIAL MEDIA



CREATE

Use pithy, value-based messages supported by science



AMPLIFY

Saturate your market with consistent messaging



CONNECT

Engender trust: tag NASF, local news, and partners; make it easy to engage



PUTTING THE PIECES TOGETHER... ON CAPITOL HILL



CREATE

Communicate value
with the appropriate
lens



AMPLIFY

Use consistent,
targeted messaging
to inform specific
policy, legislation



CONNECT

Engender trust by
being available and
open





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THANK YOU

FOR YOUR TIME AND ATTENTION

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