

MICHIGAN STATE UNIVERSITY: FOREST CARBON AND CLIMATE PROGRAM

Forest Carbon 101

Forest Climate Working Group Science Series



Forest Carbon and Climate Program
Department of Forestry
MICHIGAN STATE UNIVERSITY



FOREST-CLIMATE
WORKING GROUP

Agenda

➔ Opening Remarks

➔ Panel Introduction

➔ Presentations

➔ Q + A Session



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FOREST-CLIMATE
WORKING GROUP



The Forest-Climate Working Group ("FCWG")

*The only forest-sector coalition working to
advance climate-change solutions.*



ForestClimateWorkingGroup.org



What does this mean?



ForestClimateWorkingGroup.org



FCWG Member Organizations include:

- Science educators & academic researchers
- Private forest owners
- Environmental & wildlife non-profit organizations
- Sustainable forest product producers



The FCWG Coalition

- Over 80 nationwide member organizations
- Working closely with each other and stakeholders
- Including city, state, and federal governments

Toward a mutual goal...



Goal

To help deepen understanding of forest-climate science and policy issues, and advocate for solutions.



The coalition celebrates:

- **New opportunities created by legislation enacted during the 117th Congress**
- **Continuing this legislation implementation by the 118th Congress**



Together, we can:

- **Amplify forests and forest products as nature-based solutions**
- **Reduce carbon emissions**
- **Protect our nation from climate-change impacts**



FOREST-CLIMATE WORKING GROUP

ForestClimateWorkingGroup.org

Panel: Forest Carbon 101



Danielle Watson

Director, Policy & Public Affairs
Society of American Foresters



Kendall DeLyser

Director, Climate Science
American Forests



Nate Truitt

*Senior Vice President,
Business Development*
American Forest Foundation



Kathryn Maloney

Interim Director
Forest Carbon Climate
Program, Michigan State
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Danielle Watson

— Director, Policy & Public Affairs

Society of American Foresters (SAF)

Forests as a Natural Climate Solution

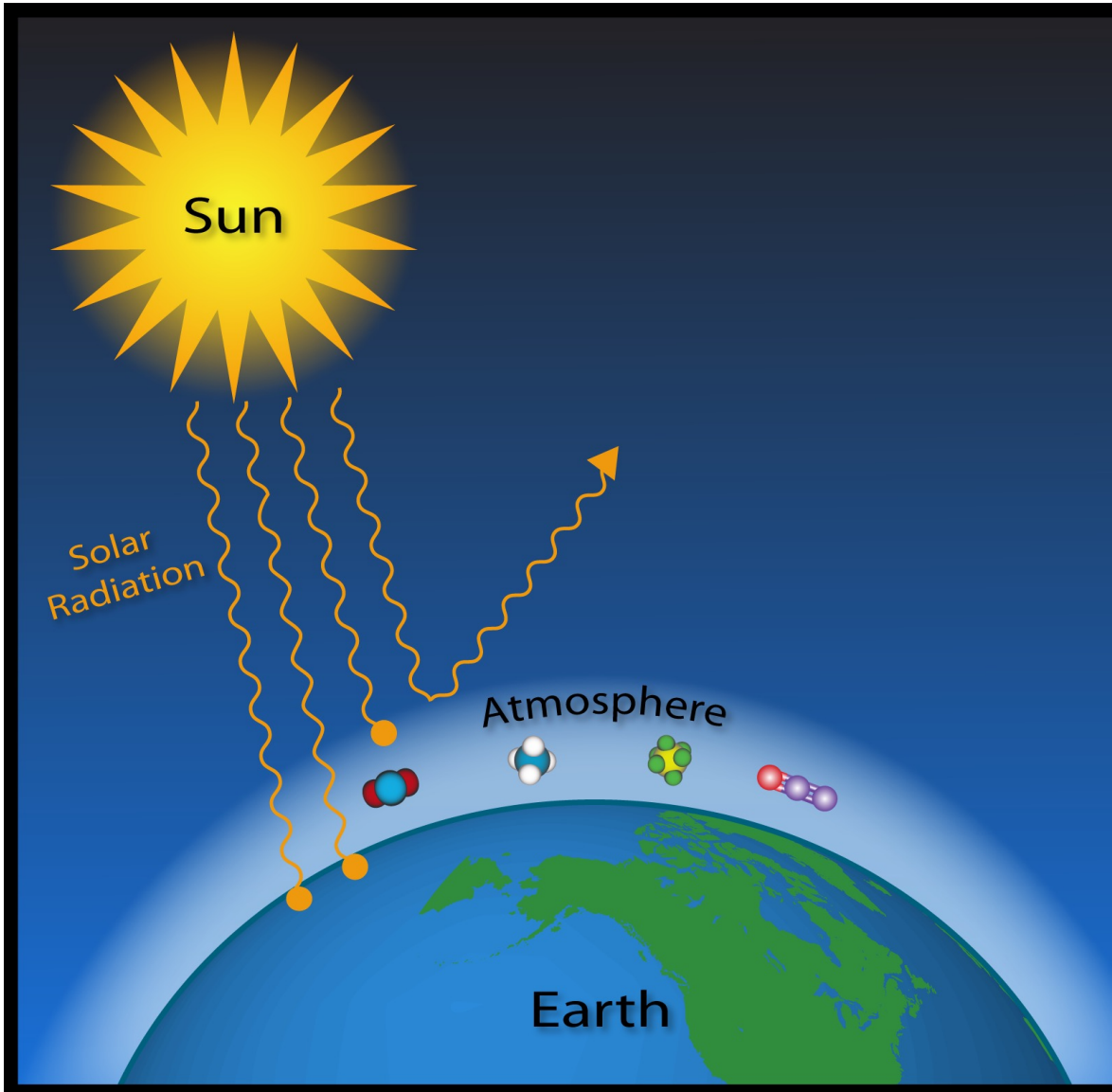


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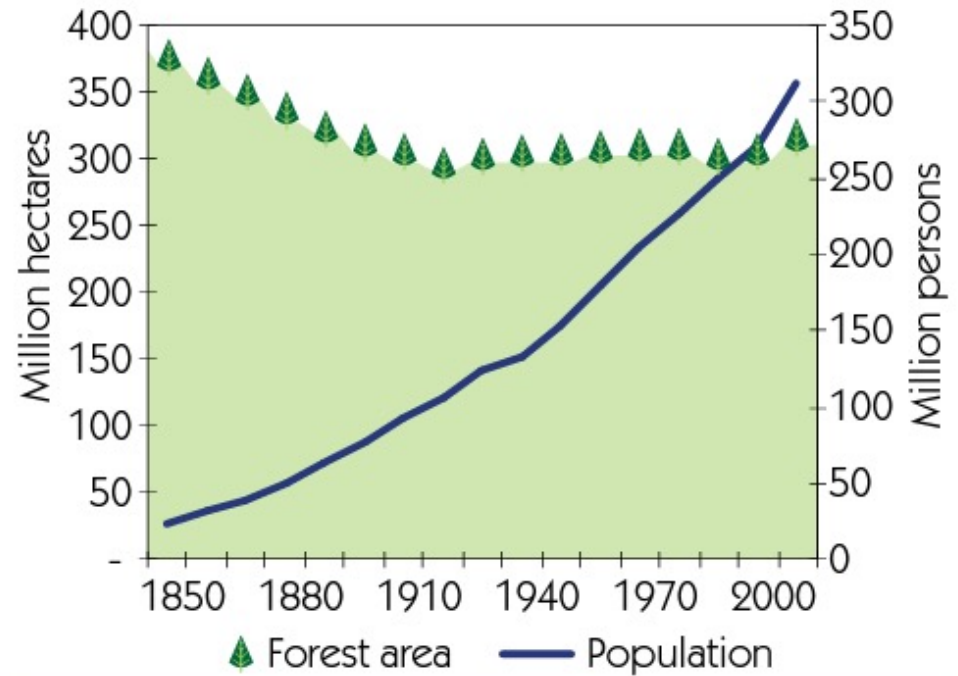
The Greenhouse Effect

A photograph of a dense forest with tall, slender trees and a thick canopy of green leaves. Sunlight filters through the trees, creating dappled light on the forest floor. The ground is covered with fallen leaves and moss. A white rectangular box is overlaid on the left side of the image, containing text.

Today's Takeaways

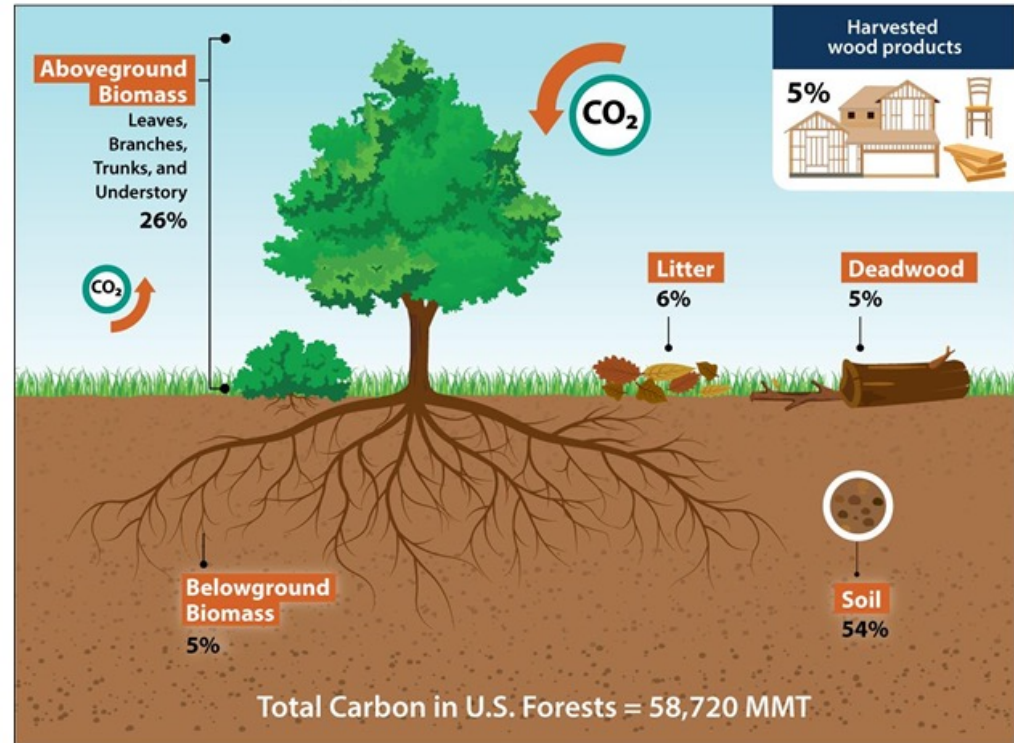
1. Forests are a climate solution.
2. Resilient forests = stable carbon.
3. Wood products are key.

Forest Land Area



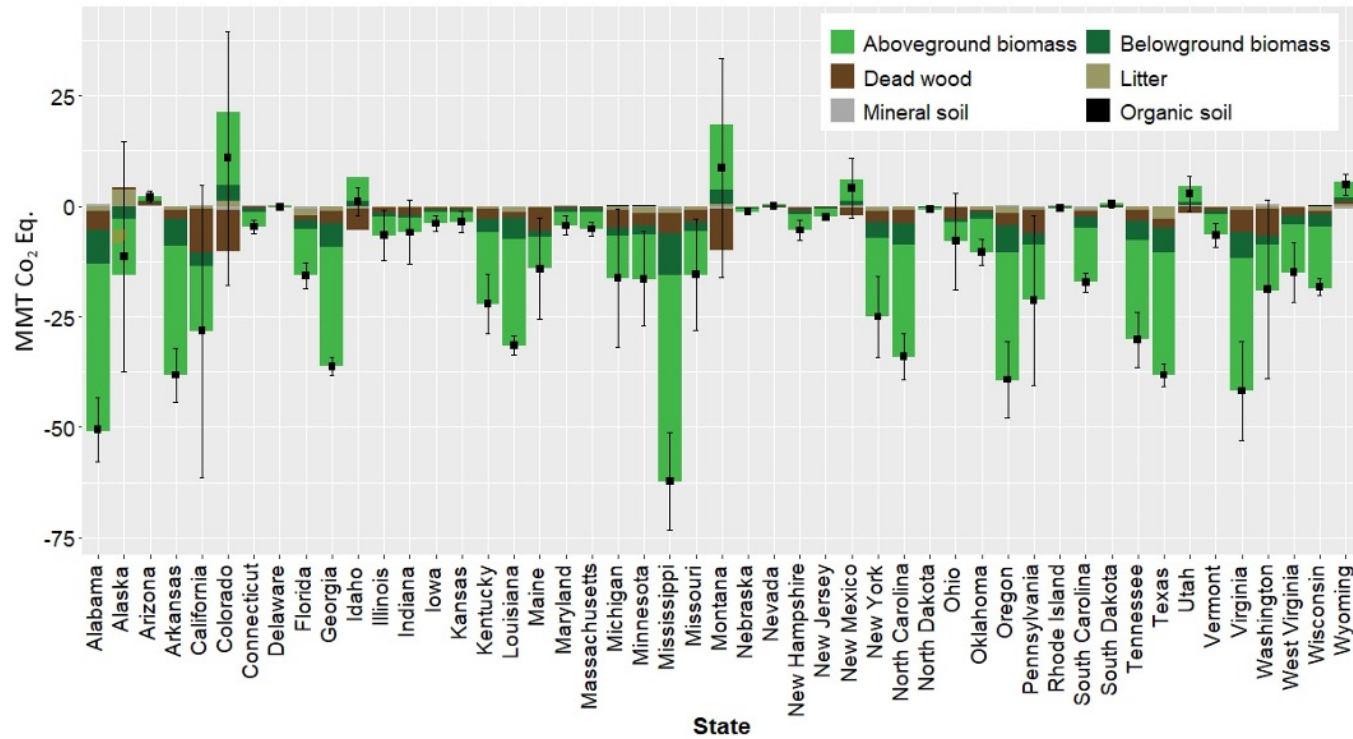
Forest area and population trends in the United States, 1850–2010.

Sequestration & Storage



Source: CRS, using data for 2019 from EPA, Table 6-12 in Chapter 6, "Land Use, Land-Use Change, and Forestry," in *U.S. National Greenhouse Gas Inventory*, EPA 430-R-20-002, April 13, 2020.

Notes: MMT = million metric tons. Percentages based on the total forest carbon stock estimate for 2019 (see Table 3).



“Most States in the conterminous United States are carbon sinks, yet in recent years, several intermountain western States including Colorado, Montana, New Mexico, Wyoming, and Utah have become sources of carbon. This is due to increases in the frequency and severity of natural disturbances including wildfire, weather, insects, and disease in recent decades.”

Total Burned Area and Emissions in the US

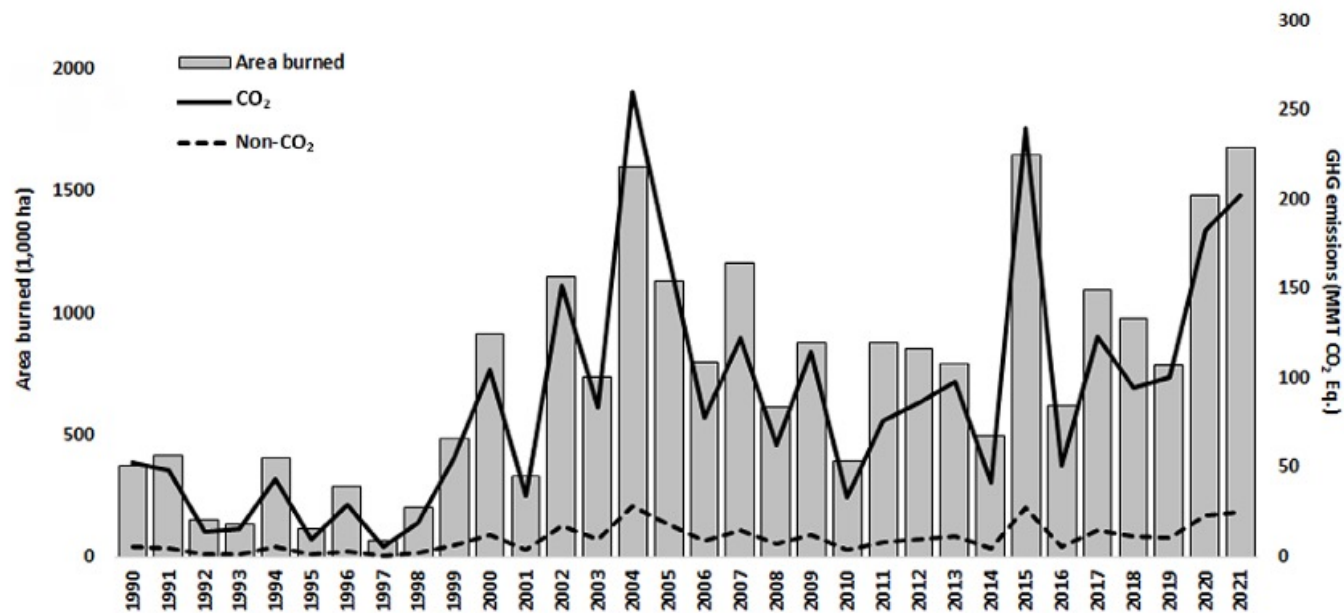
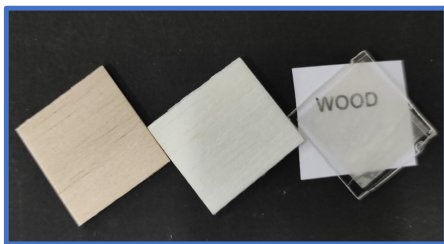
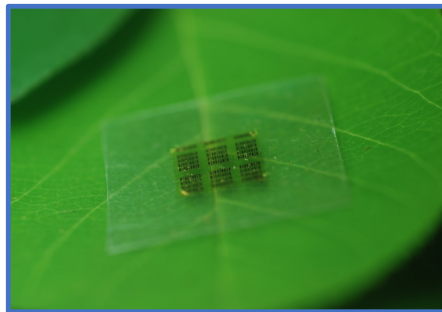


Figure 3.—Estimated annual CO₂ and non-CO₂ (N₂O and CH₄) emissions from wildfire and prescribed fire on forest land in the conterminous 48 States and Alaska, 1990–2021.



“In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fibre or energy from the forest, will generate the largest sustained mitigation benefit.”

-IPCC Fourth Assessment



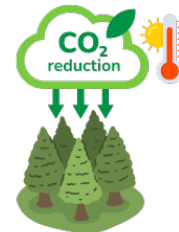
Water Conservation
and Quality



Physical and Spiritual
Well-Being



Wildlife and
Biodiversity



Climate Regulation



Infrastructure and
Wood Products



Jobs &
Local Economies



Kendall DeLyser

— Director, Climate Science

American Forests

Forests provide many benefits



80% of land-dwelling species need forests to survive



Nearly **55%** of our drinking water comes from forests



Trees absorb air pollutants, preventing **670,000 cases** of acute respiratory symptoms each year



Forests and forest products capture and store **17%** of annual US carbon emissions from fossil fuels



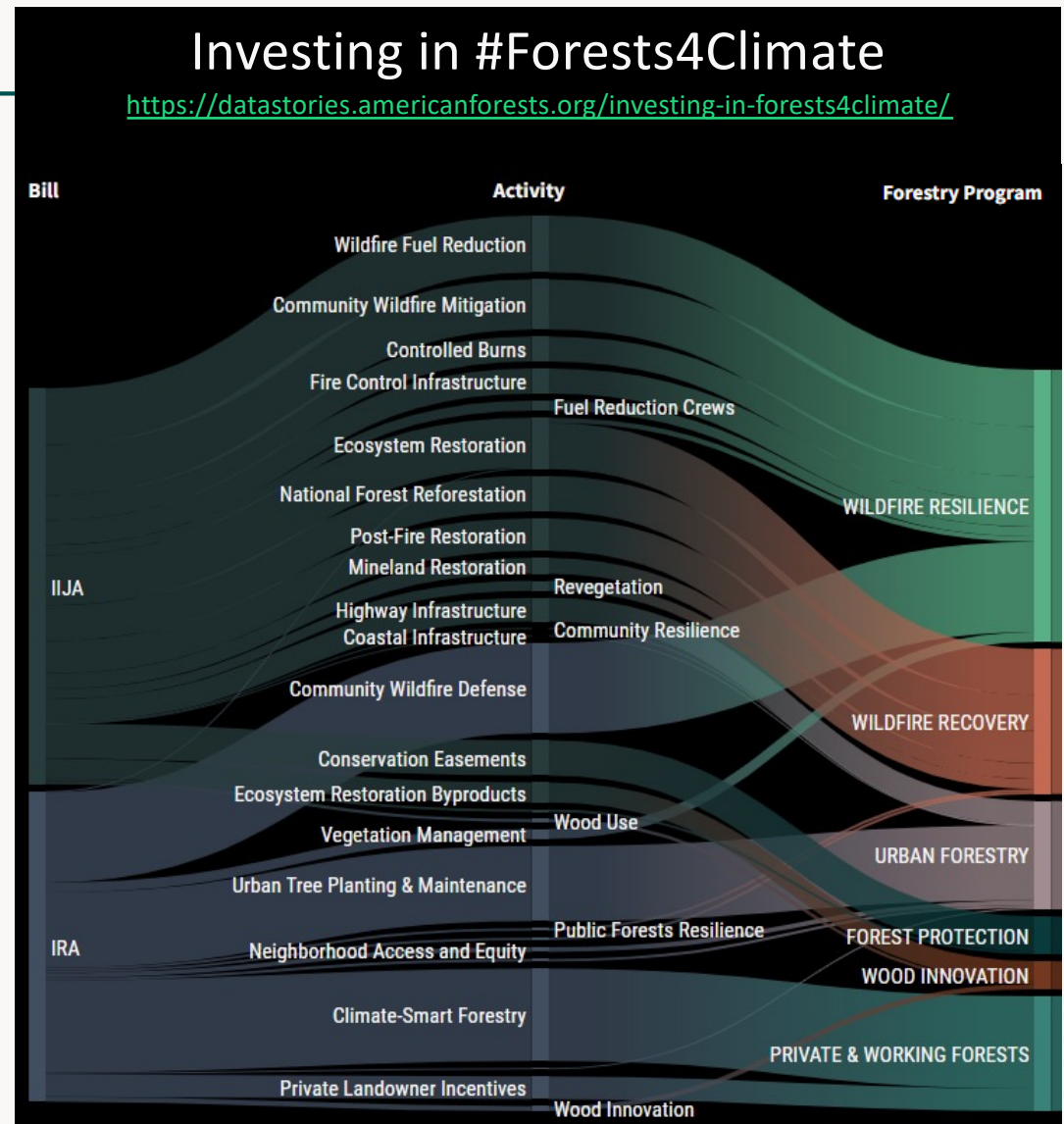
Climate-smart forestry

Climate-smart forestry (CSF) balances the ability of forests to:

- **adapt to** climate change
- **mitigate** climate change
- provide fundamental **co-benefits** such as wood products, water, or wildlife habitat

CSF techniques can be used for:

- Wildfire resilience and recovery
- Forest protection
- Sustainable management of private & working forests
- Urban forestry
- Innovative uses of wood products



Three climate-smart forestry categories



Tree planting

Managing existing forests

Protecting against forest loss

Climate-smart forestry in the Mid-Atlantic

- ✓ **Maintain and increase forest extent** through *reducing deforestation, afforestation, and silvopasture* (the integration of low-density tree canopy into active pastureland without removing the land from productive pasture use).
- ✓ **Protect the ability of forests to naturally regenerate** and foster forest diversity by *controlling deer browse and restocking understocked stands* where it is ecologically appropriate to add more trees.
- ✓ **Encourage sustainable management practices** on private lands, e.g., by *reducing diameter limit cuts* (also known as high grading, an ecologically damaging practice which encourages landowners to harvest the largest and most valuable trees from their forests and leave only smaller or stunted trees behind).
- ✓ **Increase forest carbon stocks while sustaining timber supply** by *extending rotations* to optimize tree growth.
- ✓ **Prepare for potential negative impacts of climate change**, especially from increasing forest pests and diseases.



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Impact of Forest Management and Wood Utilization on Carbon Sequestration and Storage in Pennsylvania and Maryland



Major finding:

Climate-smart forestry can increase the forest carbon sink by 29% in Maryland and 38% in Pennsylvania by 2030.

Source: DeLyser et al. 2022



Nate Truitt

Executive Vice President, Climate Funding
American Forest Foundation

Mechanisms to Engage Landowners in Natural Climate Solutions

Nathan Truitt
Executive Vice President, Climate Funding
May 8, 2023



American
Forest
Foundation

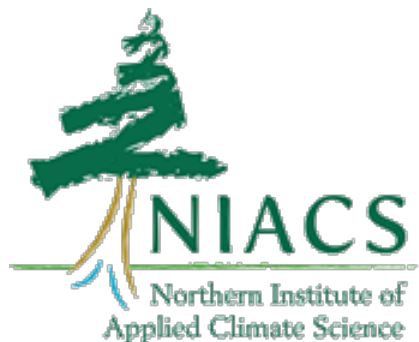
STEP ONE: The Know-How

We need to know **what specific practices** will generate climate (and other) benefits, and landowners and other practitioners need **guidance in implementation**.

Forest Inventory and Analysis

We are the Nation's Forest Census

Welcome!



PLUS:

- Universities
- Non-profits developing practices



STEP TWO: Outreach and Education



In the U.S.

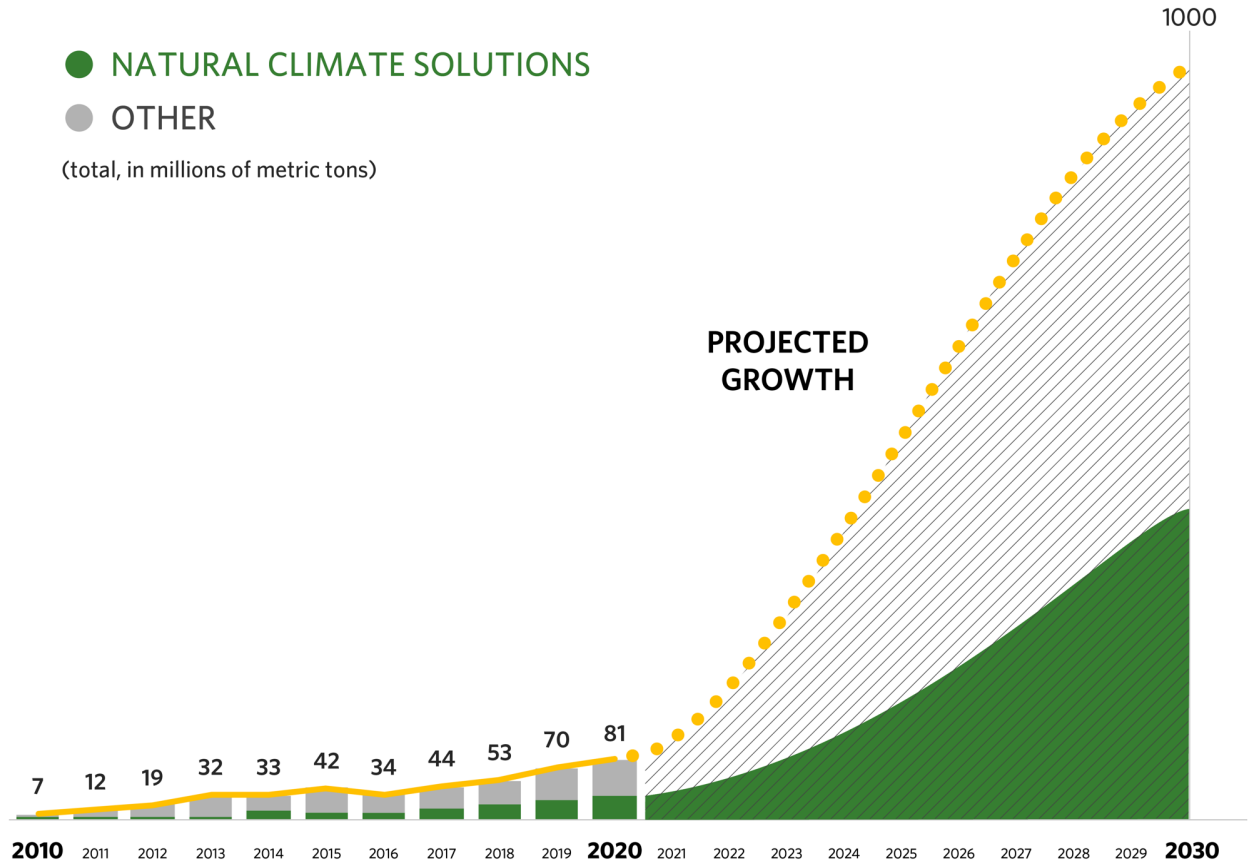
- 39% of US forestland owned by families and individuals
- ~290 million acres (size of TX + CA)

Since 2020, the Family Forest Carbon Program has:

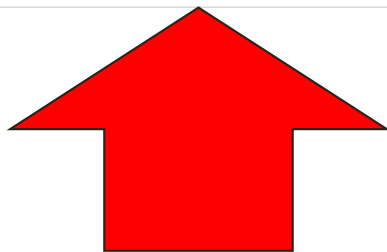
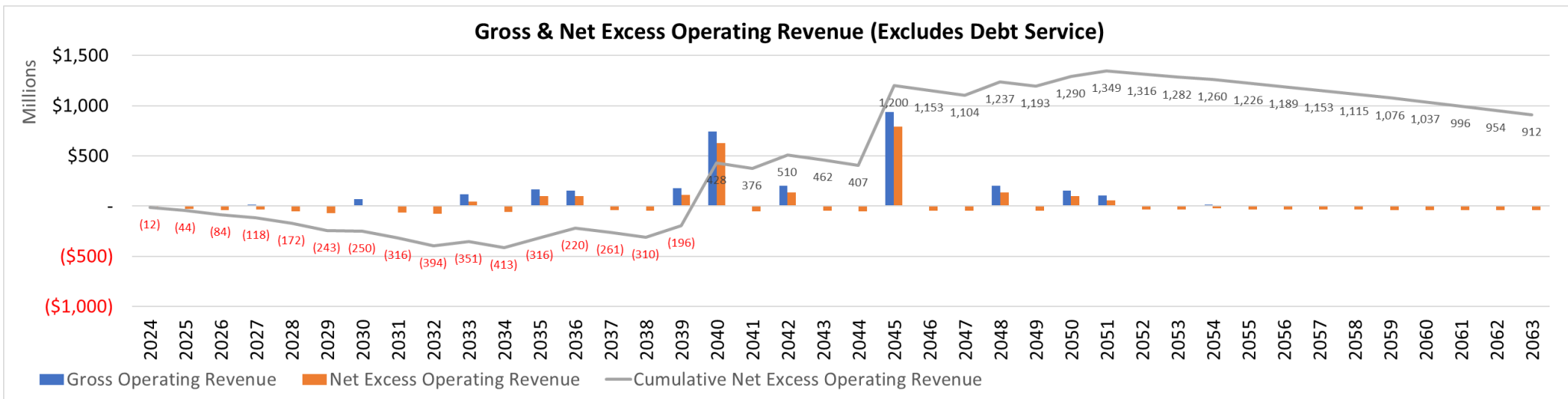
- 1,307 visits completed
- 237,000 acres

STEP THREE: Paying for Implementation

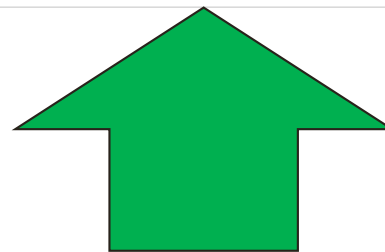
OPTION A: "Voluntary" Carbon Markets



The Problem With Carbon Markets



Large upfront costs (LO recruitment, Technical Assistance, implementation) need to be covered before . . .



. . . the production and sale of carbon credits on the voluntary market generate returns for landowners and sustain practices over time

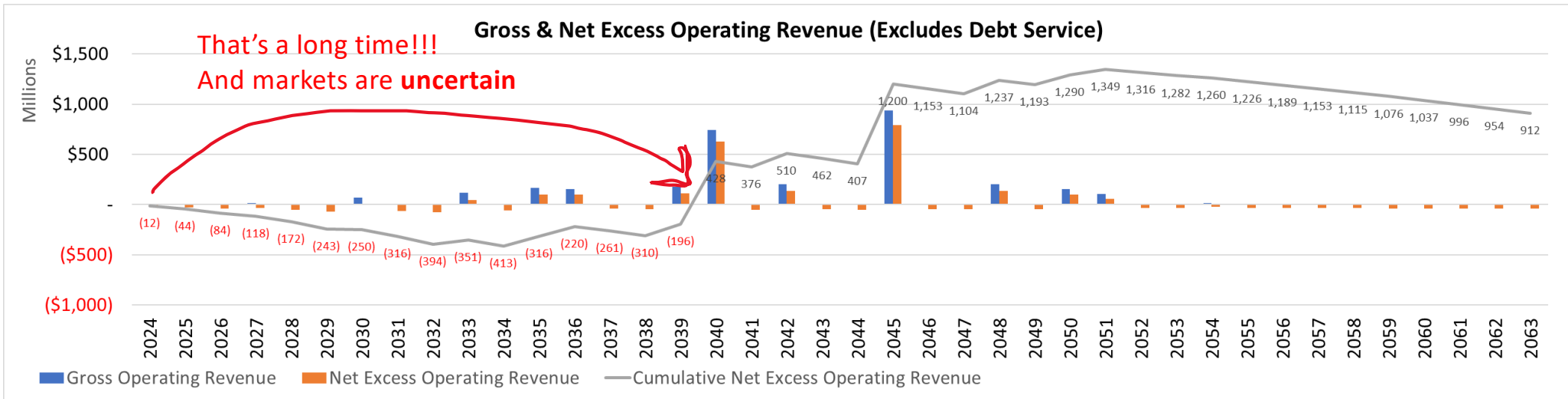
STEP THREE: Paying for Implementation

OPTION B: Government Funding (IRA, etc.)

Opportunities	Challenges
Order of magnitude more funding available than historically	Still a drop in the bucket compared to what is required to fully activate forests as a climate solutions
Basic infrastructure for using funds to incentivize practice adoption is in place	Agencies will struggle to distribute these amount of funds without changes to business-as-usual practices
Clearly expressed congressional support for adapting implementation to be more flexible and support market-based conservation approaches	Flexibility has not fully manifested itself on the ground, leading to more burden on landowners and partners than is entirely necessary
Alignment with markets can leverage private funding and “close the gap” to the level of funding required, helping the U.S. meet its NDC while also providing billions in support to rural communities	How to align these funds with markets is challenging and requires innovation and flexibility; the easy road is to just distribute the money

STEP THREE: Paying for Implementation

OPTION C: Private Funding (loans, bonds, etc.)

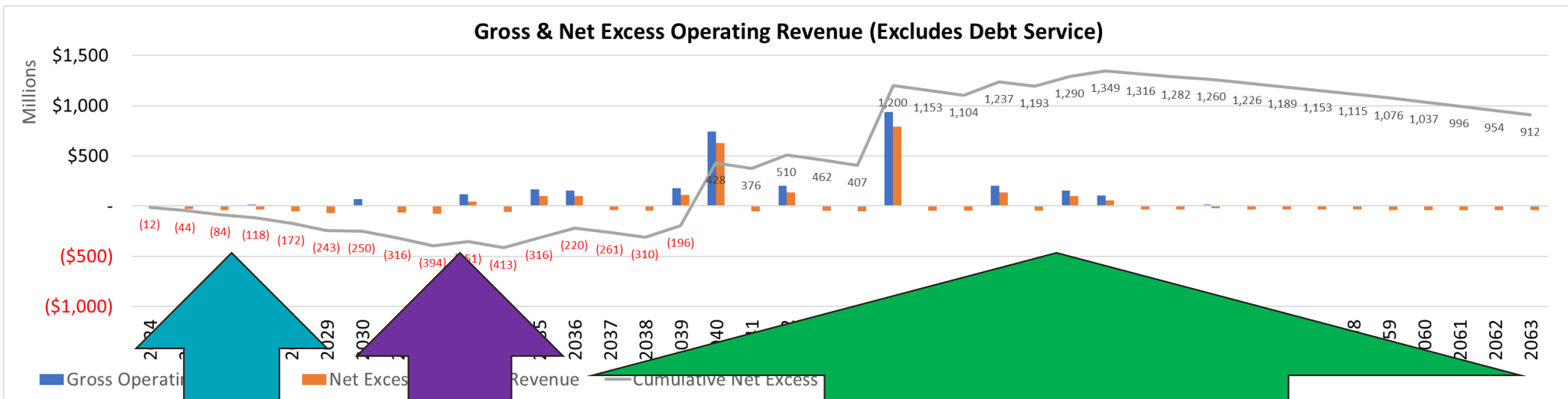


We need **credit enhancement** to reduce the risk for private investors.

Example: **Rural Forests Market Act**



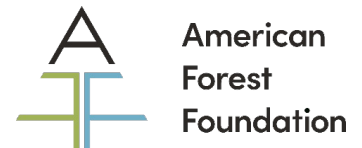
Ideal Solution: A, B and C together



Government funding subsidizes LO engagement, technical assistance and initial implementation

Credit enhancement crowds in private financing

... the production and sale of carbon credits on the voluntary market generate returns for landowners and sustains practices over time



— In conclusion

Government action

- Investments in forest and climate science
- Support for landowner engagement and education
- Flexible incentive programs for forest landowners
- Alignment of programs with carbon markets
- Provision of credit enhancement

Will result in

- Activation of forest climate solutions at a meaningful scale
- Taxpayer value: taxpayers pay a little to get the machine rolling; the private sector takes over to fund the lion's share of impact
- New revenue stream for rural communities across the U.S., with minimal or even positive impact to other values (timber), for example
- U.S. becomes the leader in a rapidly growing global market, attracting funds and investment in U.S. forests from companies and organizations around the world



Questions?

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