

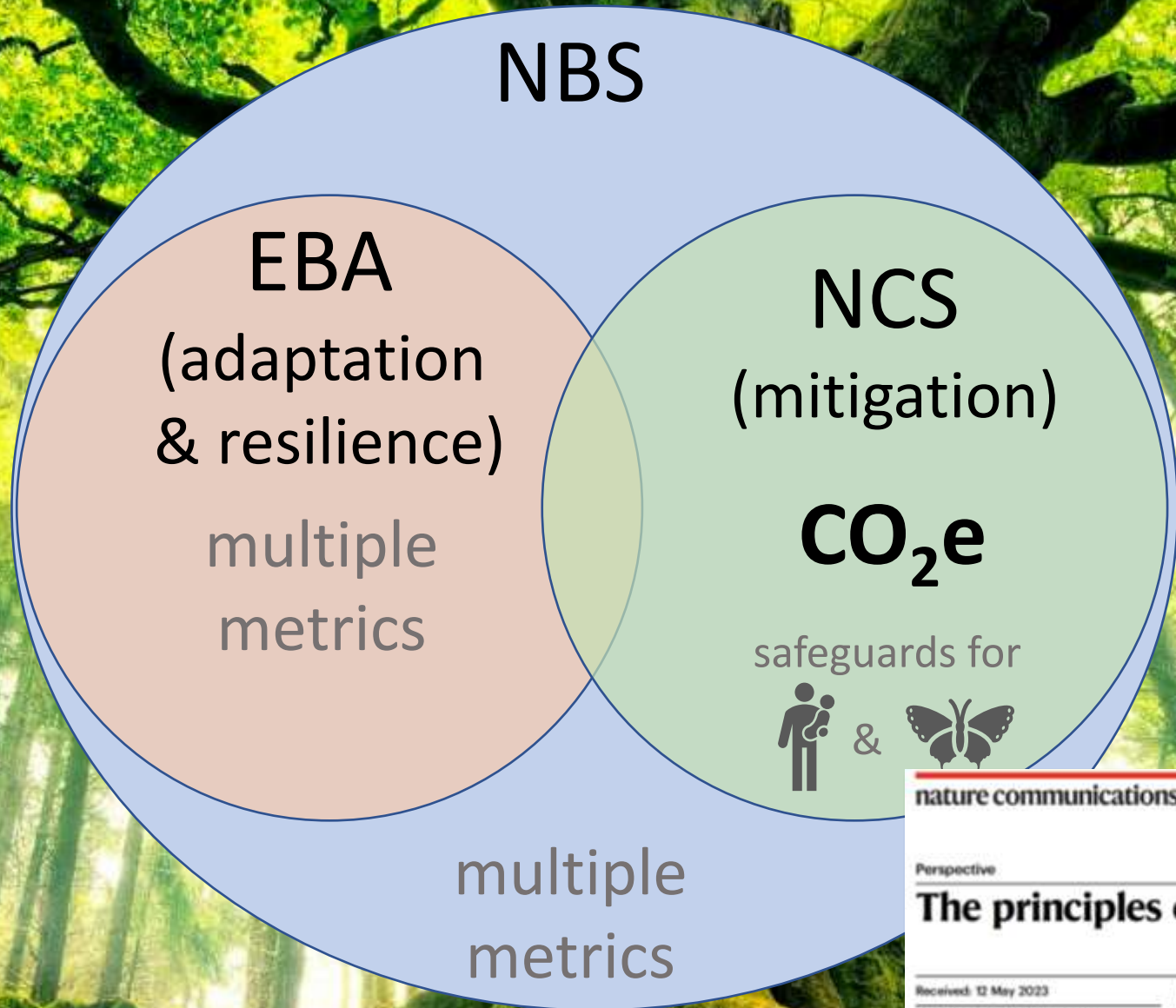



Unlocking The Giant: Natural Climate Solutions

40th Annual Connecticut Land Conservation Conference



Bronson Griscom, Conservation International



- 
- **NCS Myth Busting**
 - **Unpackaging Type of NCS – Global to Local**
 - **NCS Roadmap**

Myth 1: NCS are small potatoes?

NCS are the largest climate mitigation sector

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PRIMARY RESEARCH ARTICLE



Land-based measures to mitigate climate change: Potential and feasibility by country

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Melissa Chapman⁶ | Vassilis Daioglou^{7,8} | Andre Deppermann⁹ |
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Alexander Popp¹⁶ | Charlotte Rivard²² | Jonathan Sanderman²² | Brent Sohngen²³ |
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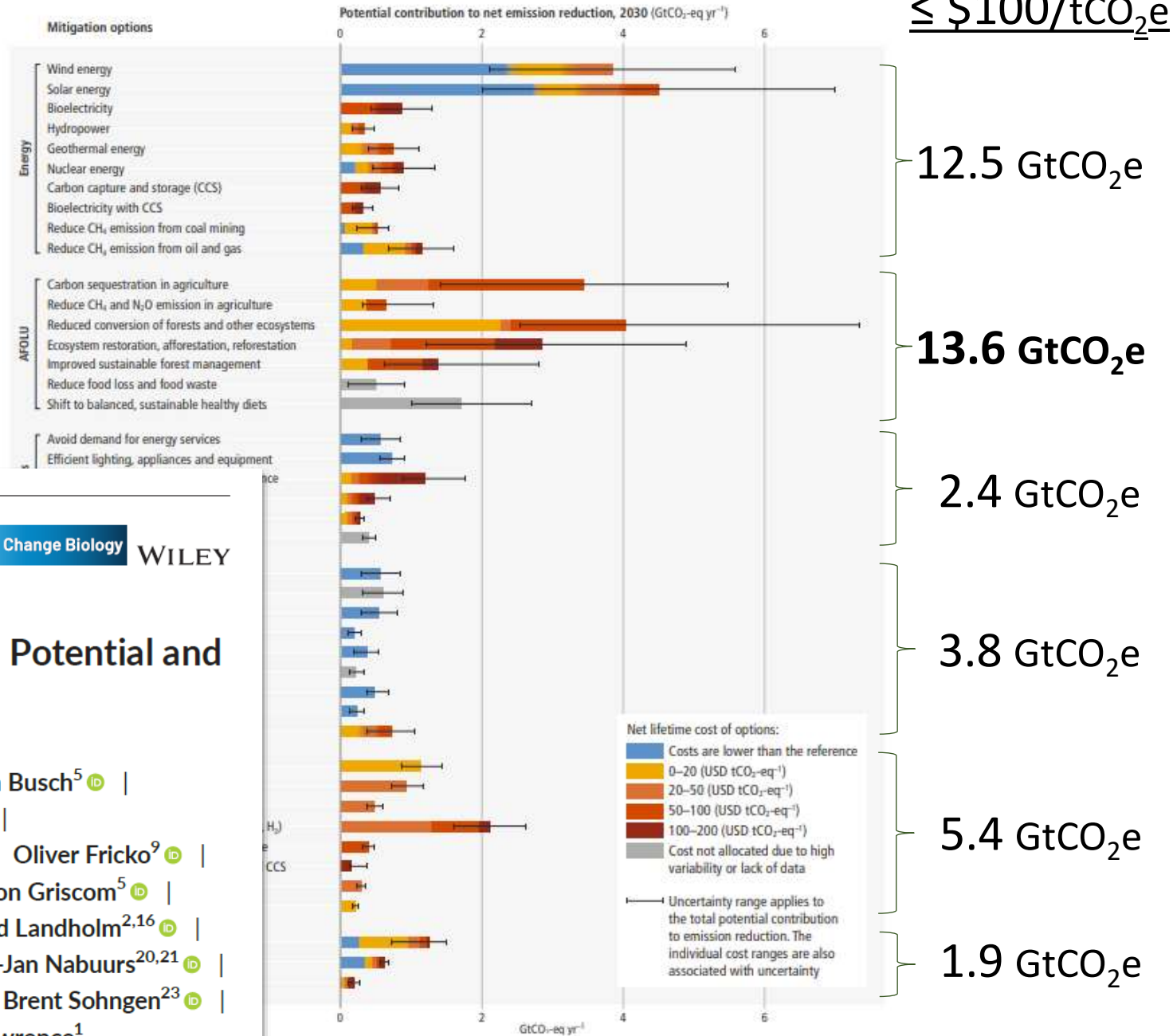
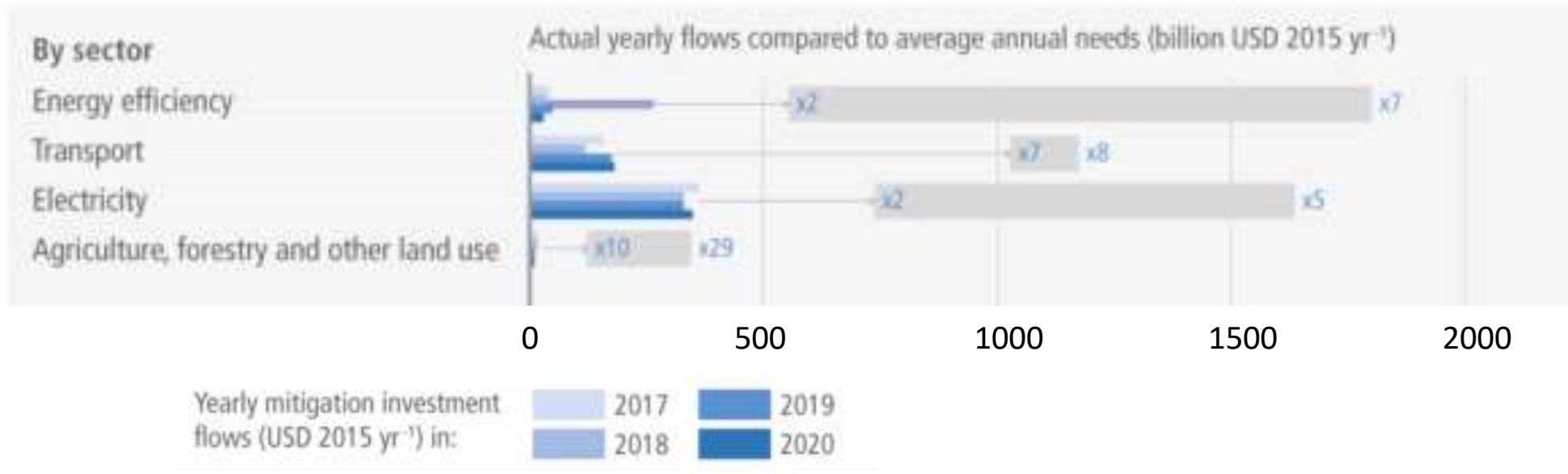


Figure SPM.7 | Overview of mitigation options and their estimated ranges of costs and potentials in 2030.

YET, funding for NCS remains a small potatoe...

Chapter 15

IPCC AR6 WGIII



Myth 2: NCS are insufficiently durable?

- False balance of the news.
- Every decade counts.
- Scale and location helps.
- Double or nothing bet.



OPINION

PNAS 2021 Vol. 118 No. 38 e2115218118

We need biosphere stewardship that protects carbon sinks and builds resilience

Johan Rockström^{1,2,3,4}, Tim Beringer⁵, David Holm⁶, Bronson Griscom^{7,8}, Michael B. Mascia^{9,10}, Carl Folke^{11,12}, and Felix Creutzig^{13,14}

Earth's biosphere, its extraordinary and complex web of species and ecosystems on land and in the oceans, drives the life-sustaining cycles of water and other materials that enable all life on Earth to thrive. The biosphere is also a principal driver of immense negative feedback loops in the Earth system that stabilize atmospheric CO₂ concentrations and thereby global climate—including carbon sequestration by vegetation, soils, and the oceans. As such, Earth's ecosystems have played a central role in keeping our planet's climate system unusually stable throughout the last 11,700 years (i.e., the inter-glacial Holocene). During this epoch, global mean temperatures have oscillated only about 1 °C around the pre-industrial average, providing the unique conditions that allowed human civilizations to flourish. Today, ocean and land ecosystems remove around 50% of anthropogenic CO₂ emissions from the atmosphere each year (1), an extraordinary biophysical feat, given that these emissions have risen from approximately 4 gigatonnes of



Safeguarding the biosphere from further degradation or collapse is an existential challenge for humanity. There are important steps we can take to contain the damage. Image credit: Shutterstock/Kirskiy-ua.

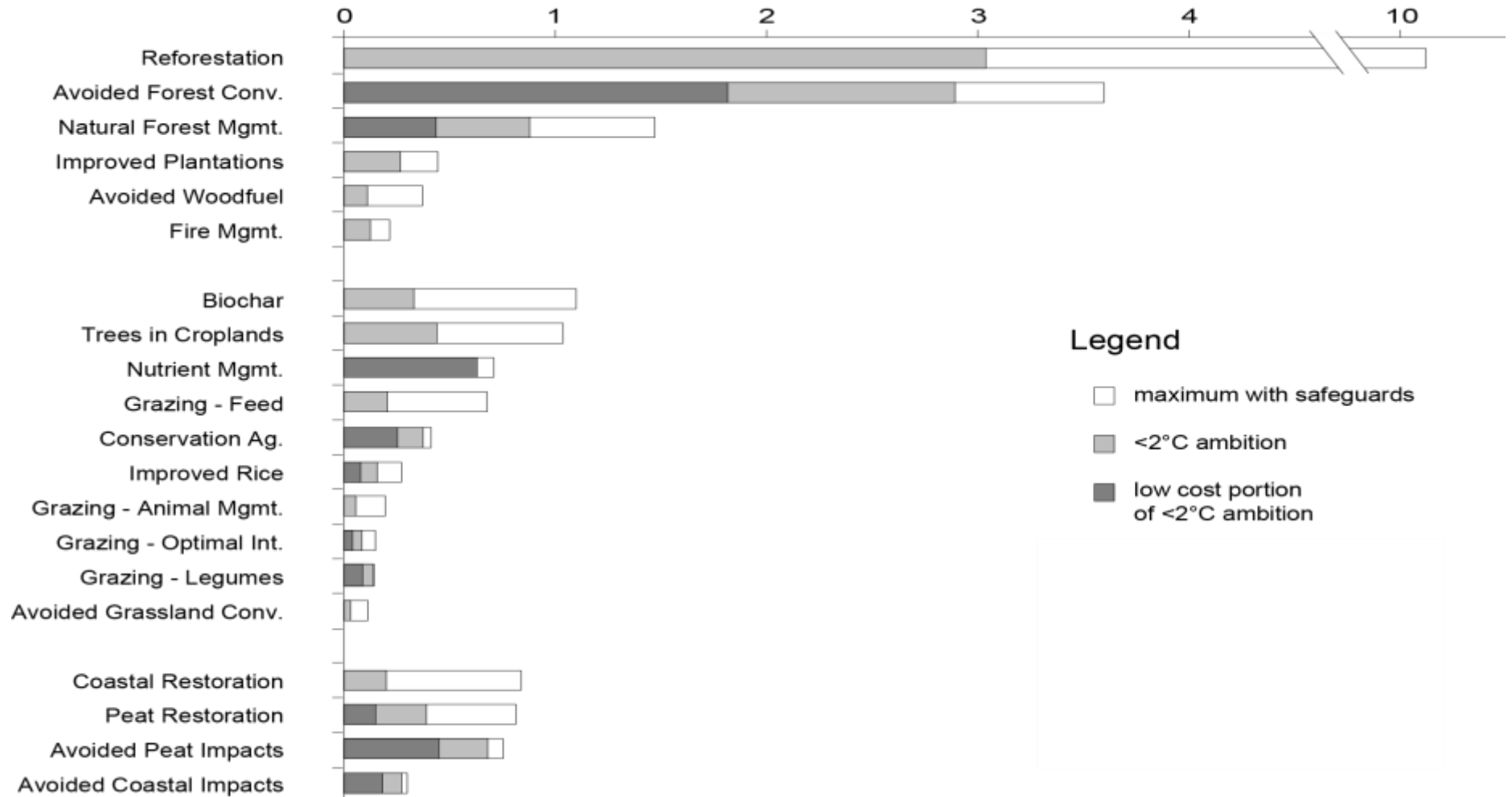
Myth 3: NCS greenwash fossil fuel emissions?

- Companies buying NCS credits are decarbonizing faster.
- Emissions trading delivers more climate solutions per \$.



20 Natural Climate Solutions

Climate mitigation potential in 2030 (Gt CO₂e yr⁻¹)



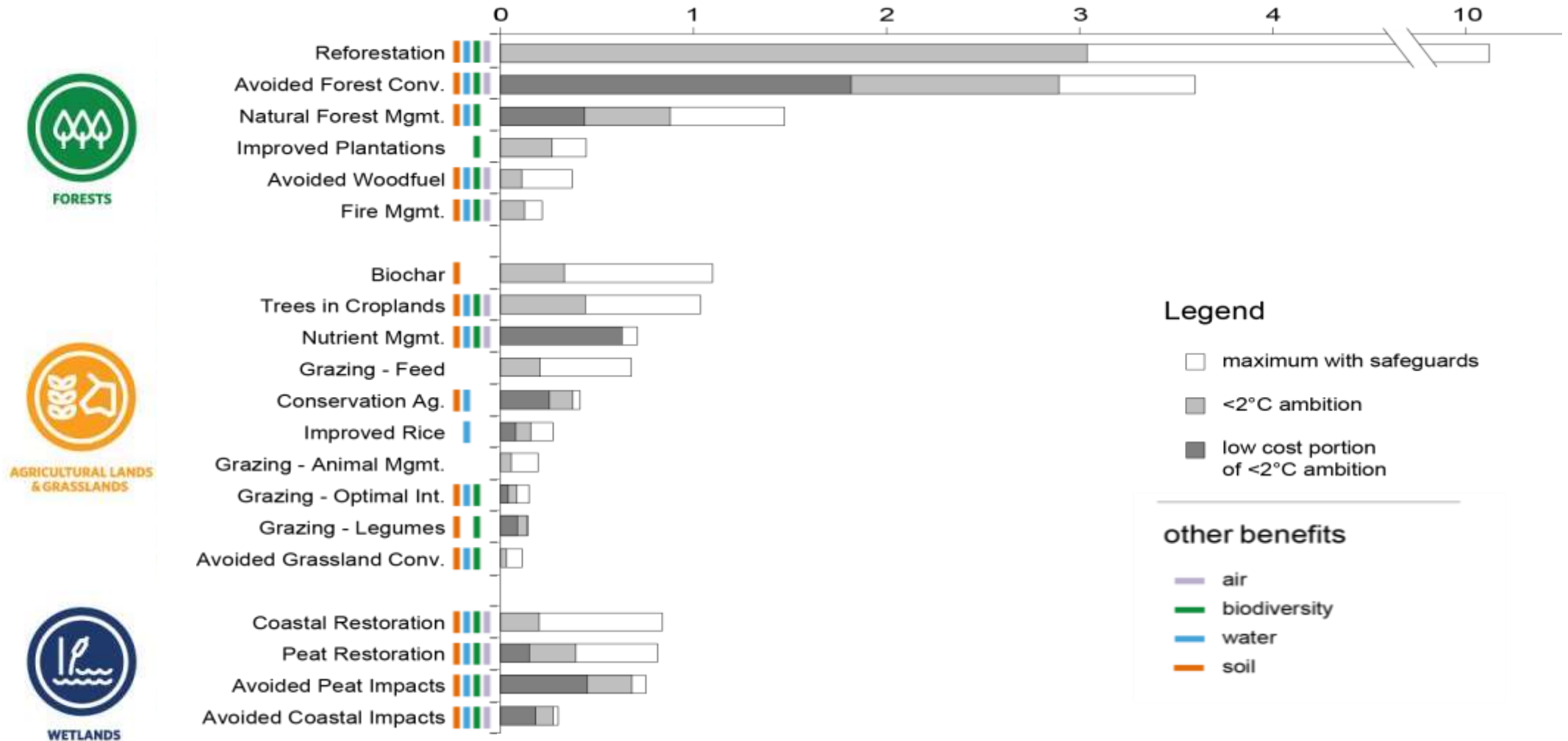
Legend

- maximum with safeguards
- <2°C ambition
- low cost portion of <2°C ambition

Source: Griscom et al., PNAS (2017)

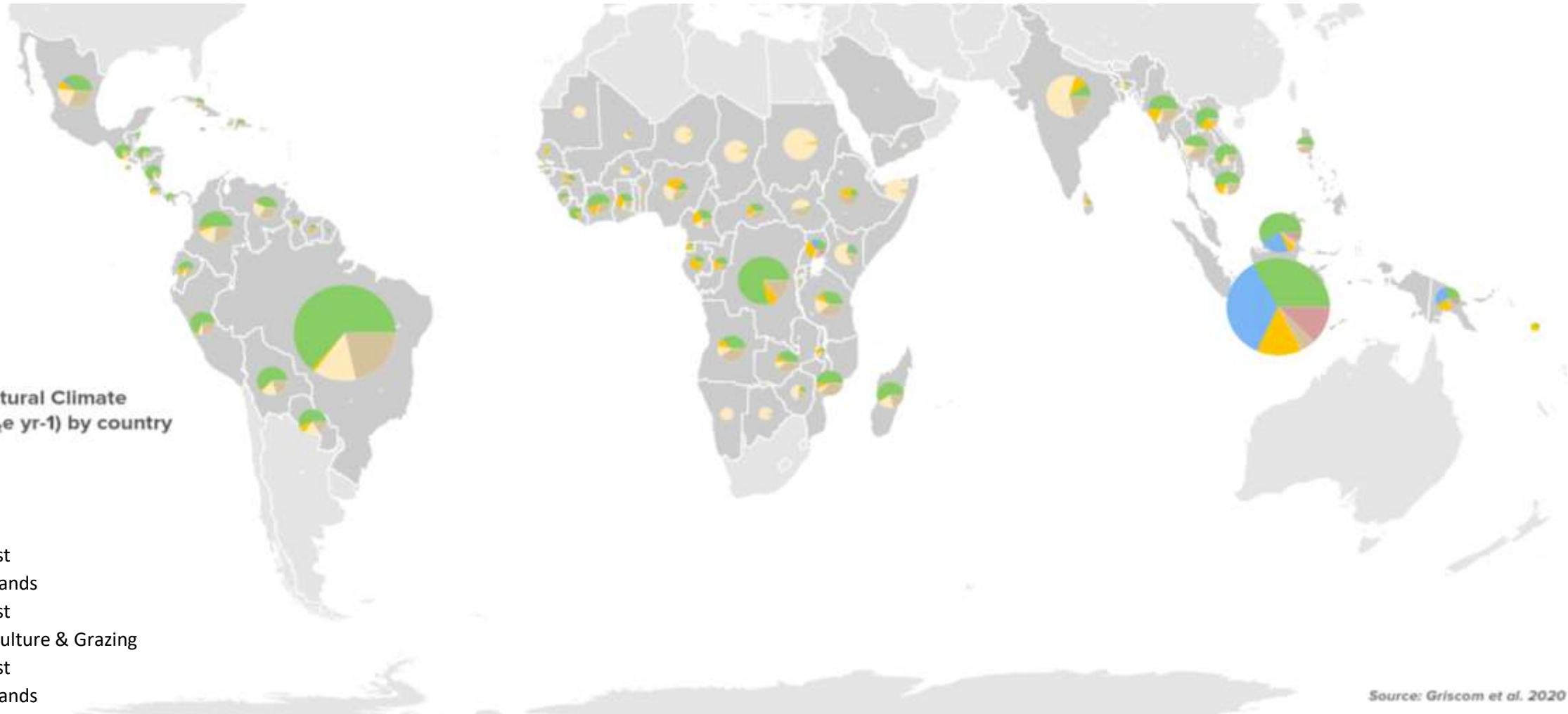
20 Natural Climate Solutions

Climate mitigation potential in 2030 (Gt CO₂e yr⁻¹)



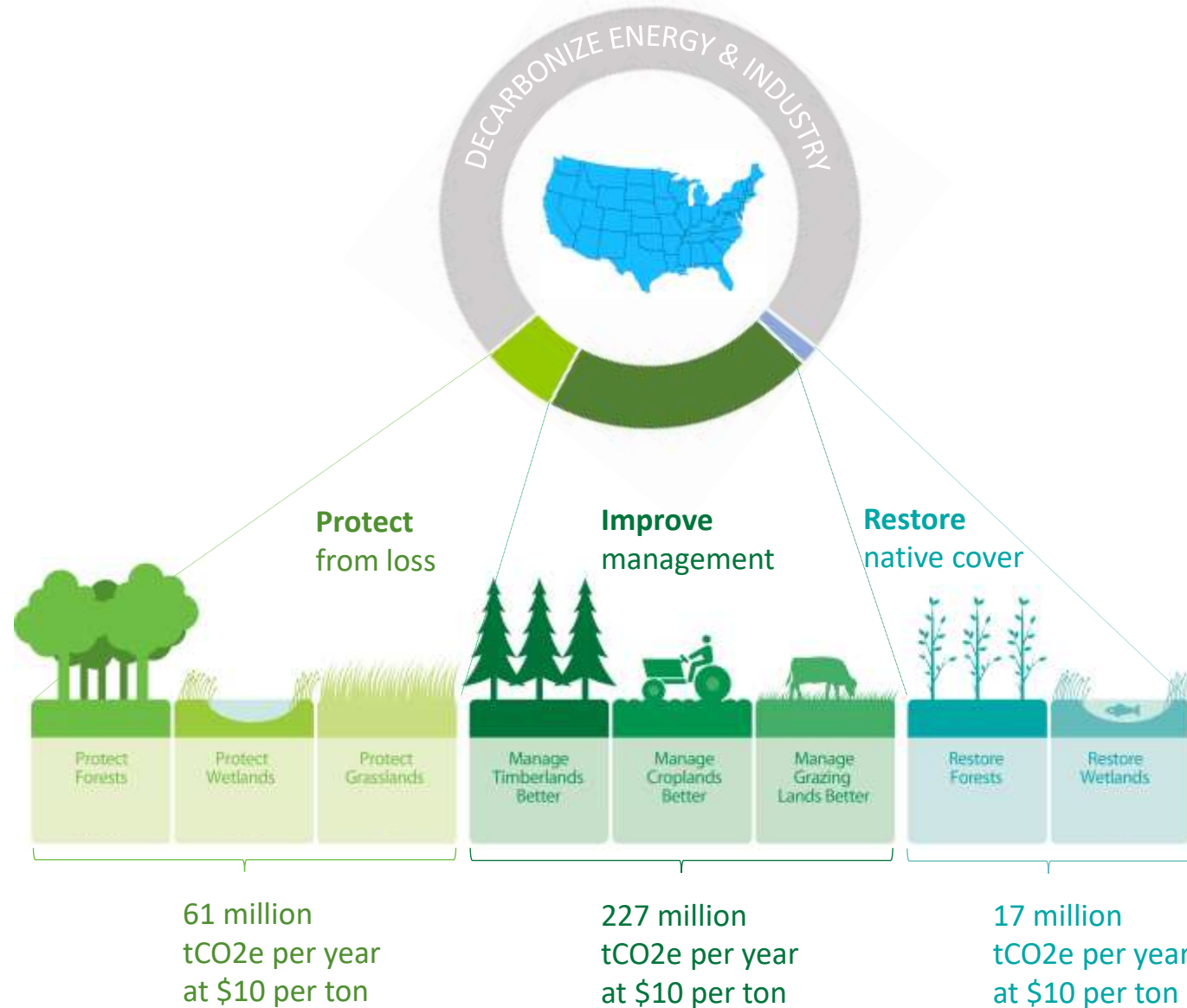
Source: Griscom et al., PNAS (2017)

GLOBAL DISTRIBUTION OF NCS

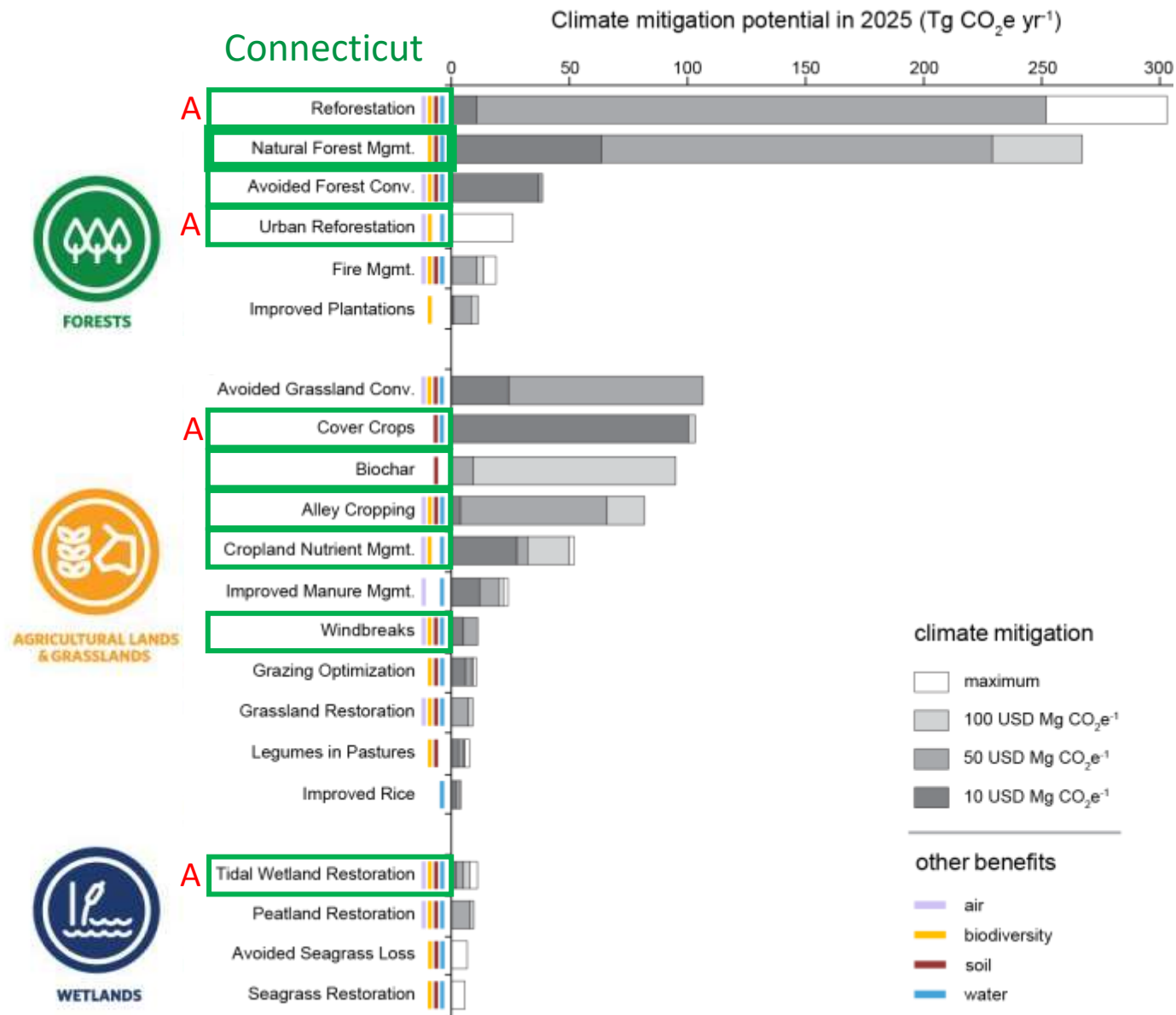


Natural Climate Solutions offer 30% of US Climate Mitigation

Needed to deliver our existing pledges, at Low Cost (<\$10/tCO₂e)



NCS in the United States



SCIENCE ADVANCES | RESEARCH ARTICLE

ENVIRONMENTAL STUDIES

Natural climate solutions for the United States

Joseph E. Fargione^{1*}, Steven Bassett², Timothy Boucher³, Scott D. Bridgman⁴, Richard T. Conant⁵, Susan C. Cook-Patton^{1,6}, Peter W. Ellis³, Alessandra Faluccci⁷, James W. Fourqurean⁸, Trisha Gopalakrishna³, Huan Gu⁹, Benjamin Henderson¹⁰, Matthew D. Hurteau¹¹, Kevin D. Kroeger¹², Timm Kroeger³, Tyler J. Lark¹³, Sara M. Leavitt³, Guy Lomax¹⁴, Robert I. McDonald³, J. Patrick Mezonigal⁶, Daniela A. Miteva¹⁵, Curtis J. Richardson¹⁶, Jonathan Sanderman¹⁷, David Shoch¹⁸, Seth A. Spawn¹³, Joseph W. Veldman¹⁹, Christopher A. Williams⁹, Peter B. Woodbury²⁰, Chris Zganjar³, Marci Baranski²¹, Patricia Elias³, Richard A. Houghton¹⁷, Emily Landis³, Emily McGlynn²², William H. Schlesinger²³, Juha V. Siikamaki²⁴, Ariana E. Sutton-Grier^{25,26}, Bronson W. Griscom³

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<https://nature4climate.org/nature-in-action/united-states-ncs-mapper/>

Natural Climate Solutions for the U.S.

National

State

1

Mitigation Potential
(Million tons CO₂e per year)

35

2014 net emissions
Million tons CO₂e per year

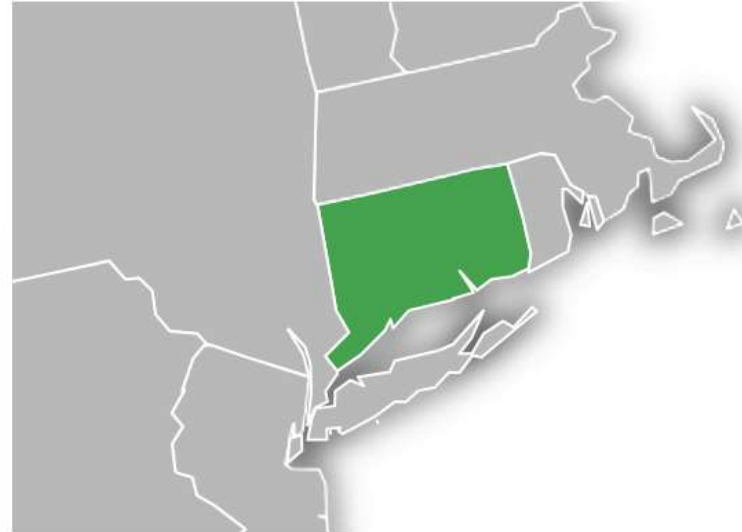


Connecticut's
Selected
NCS Potential

Connecticut

Full Extent

Click map to select state



Mitigation Pathways

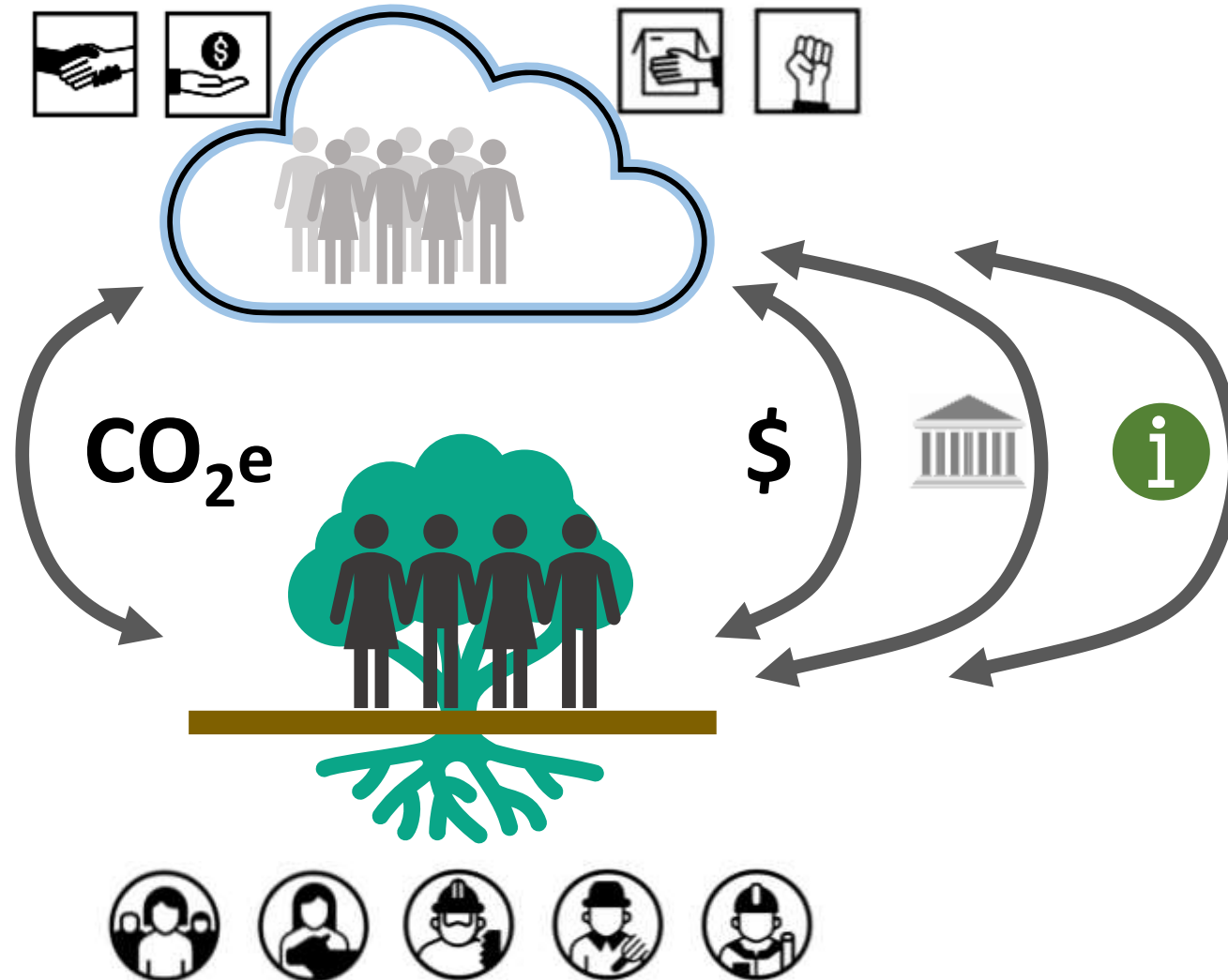
Marginal Abatement Cost
\$ per ton of CO₂e

Pathway	Off	\$10	\$50	\$100	Max
Reforestation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Avoided Forest Conversion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Urban Reforestation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Avoided Grassland Conversion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Grassland Restoration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Alley Cropping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cover Crops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cropland Nutrient Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Improved Manure Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Improved Rice Cultivation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

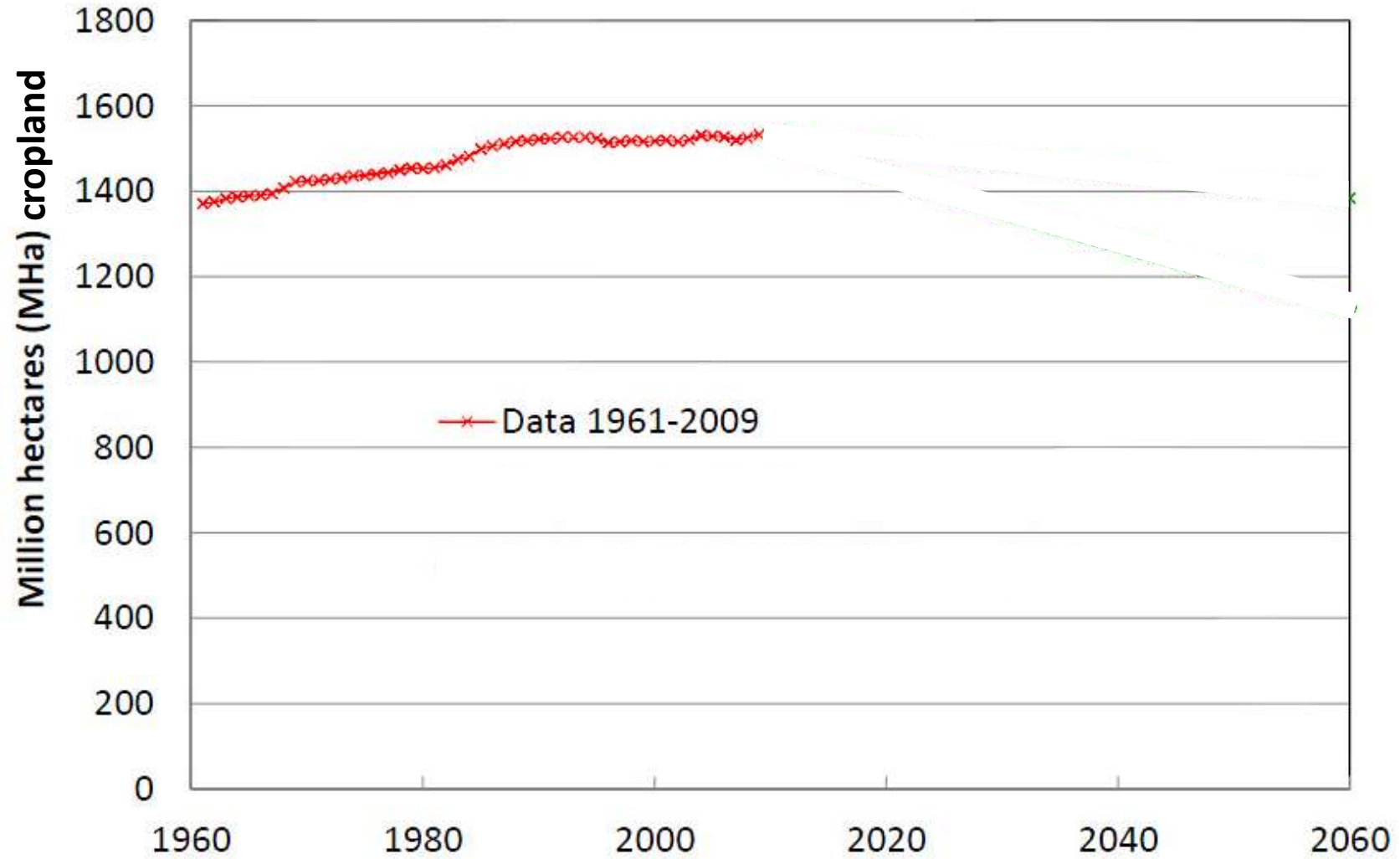
Pathway	NCS Mitigation (Mt CO ₂ per year)	Area Available (million acres)
Reforestation	0.46	0.1
Avoided Forest Conversion	0.18	0.02
Cover Crops	0.02	0.05
Alley Cropping	0.02	0.01
Cropland Nutrient Management	0.02	N/A
Avoided Grassland Conversion	0	0
Improved Manure Management	0	N/A
Grassland Restoration	0	0
Urban Reforestation	0	0
Fire Management	N/A	N/A

EXPONENTIAL ROADMAP FOR NCS

<https://www.conservation.org/priorities/exponential-roadmap-natural-climate-solutions>



PEAK LAND



SOURCE: Ausubel et. al. 2012



THANK YOU!



bgriscom@conservation.org

Importance of Natural Climate Solutions

