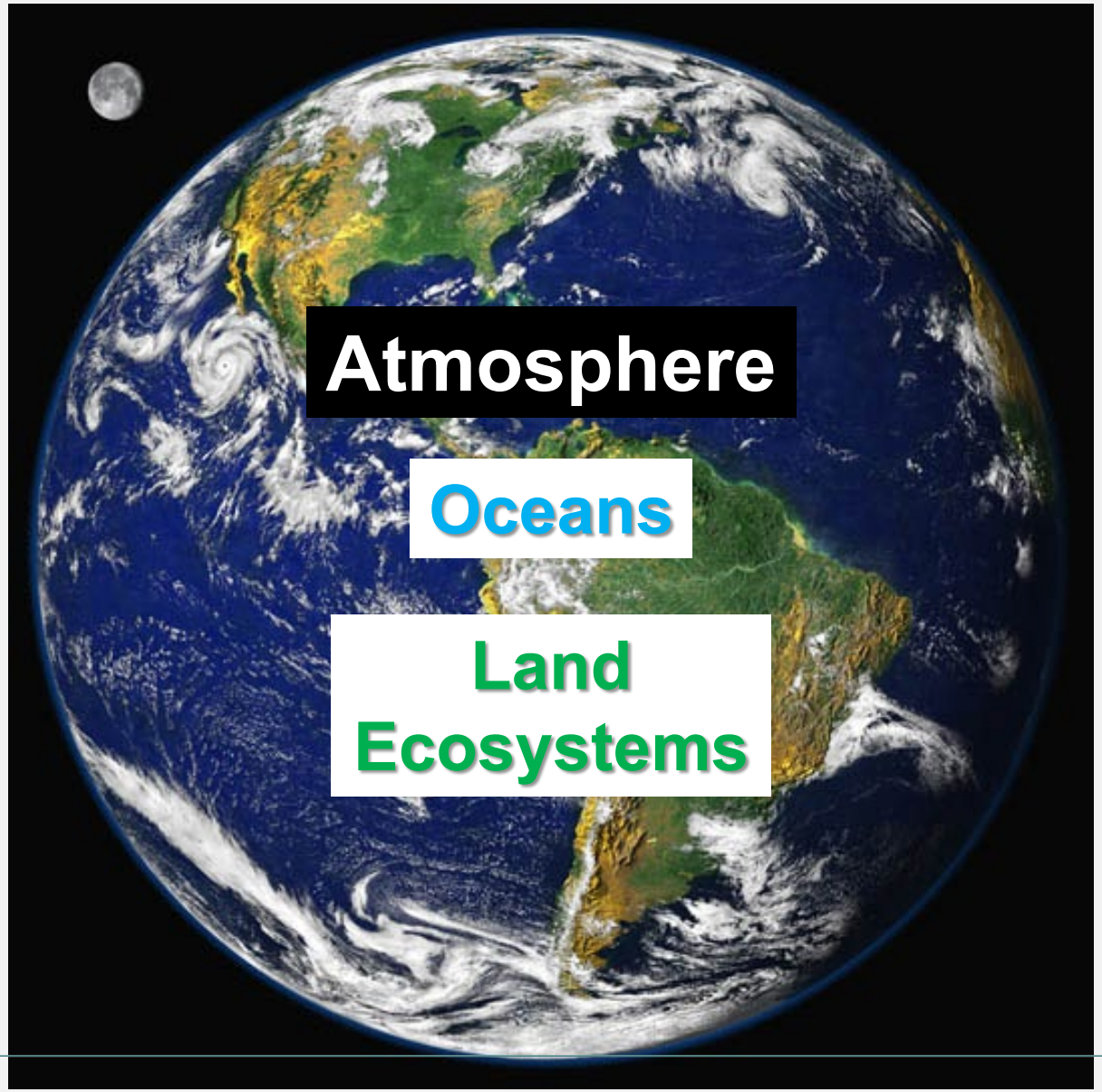
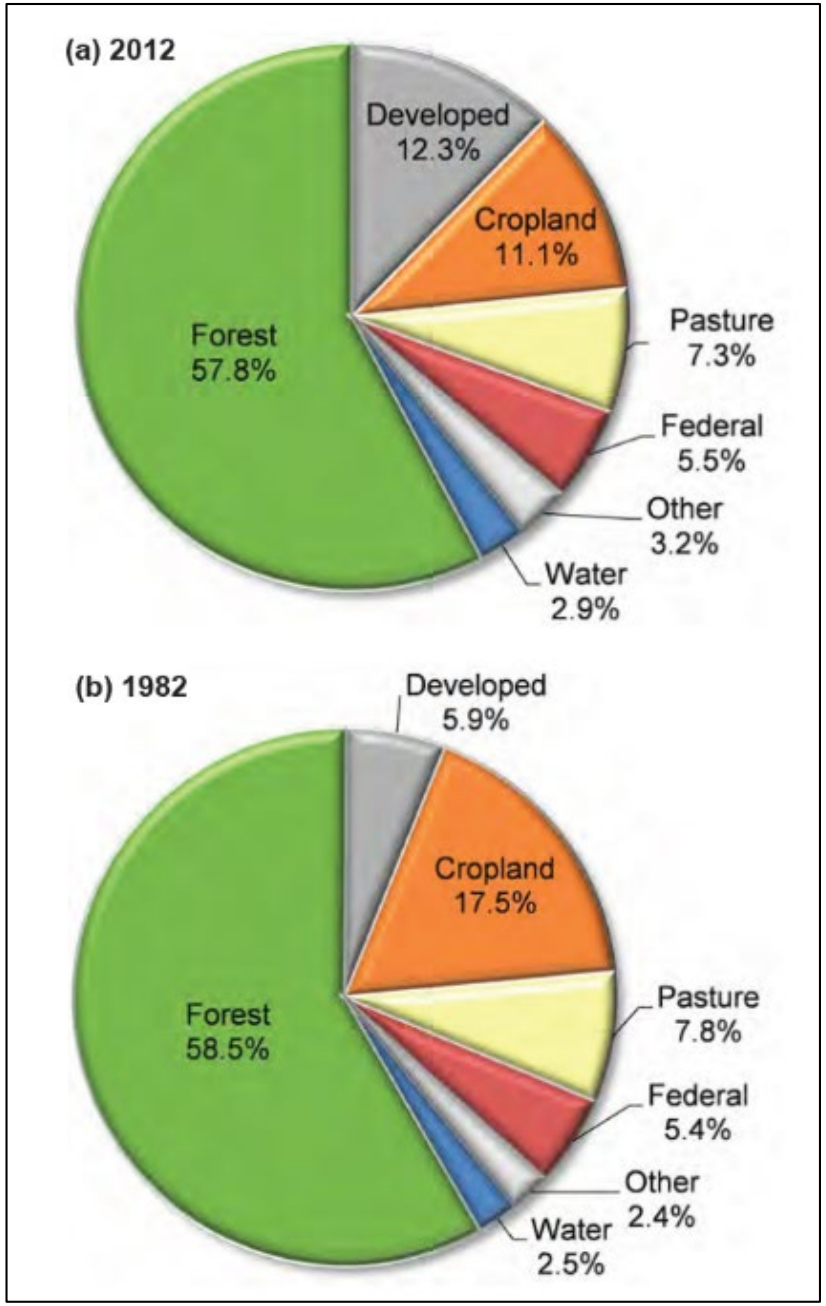
Land Sinks

Temperate Forests

Earth Has 3 Natural Carbon "Sinks"





Land Use in Georgia

USDA NRCS 2016

Global Terrestrial Biomes – Temperate Forests Some of the Most Productive

(Chapin et al. 2002)

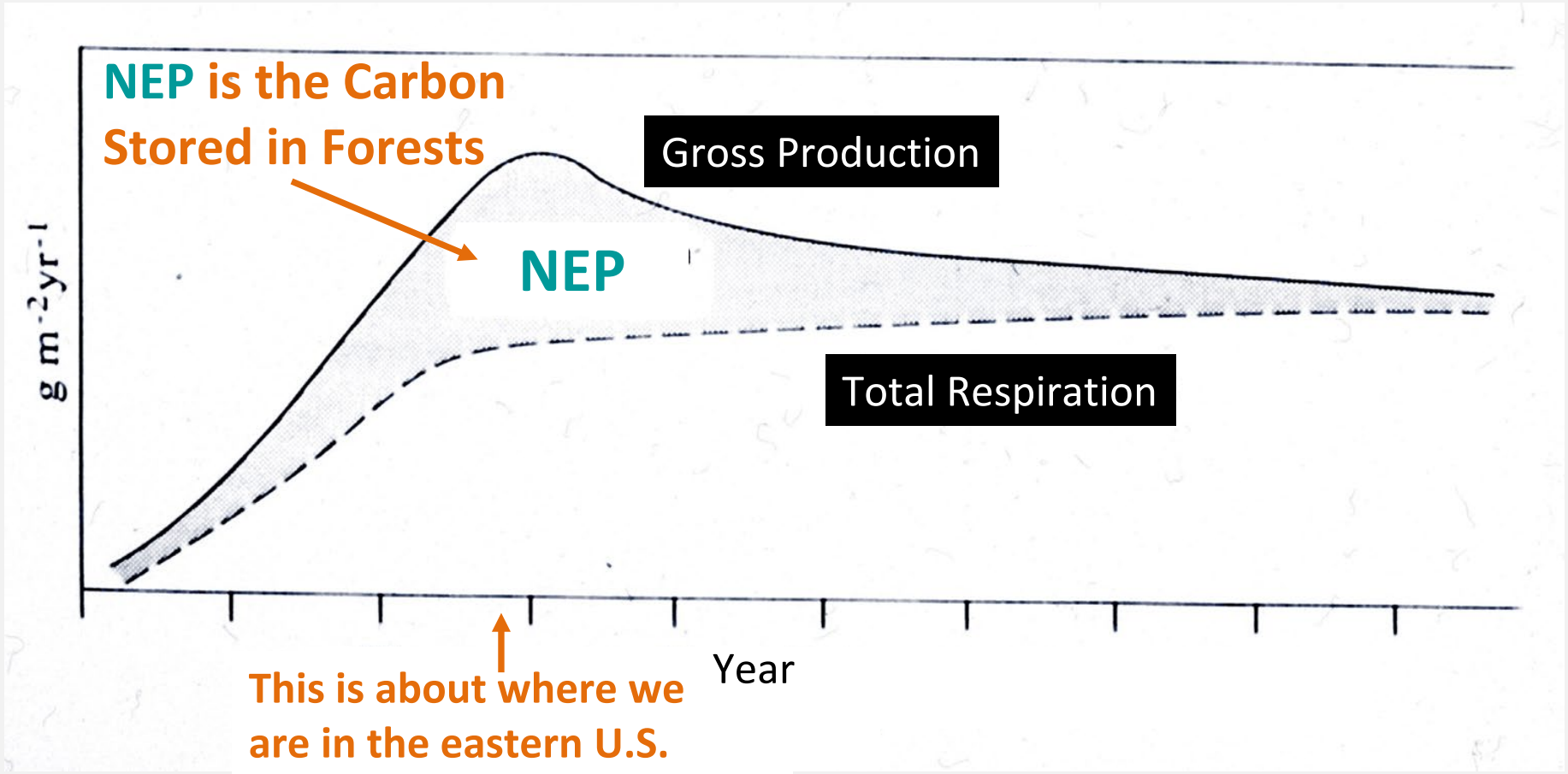
TABLE 6.3. Net primary production of the major biome types based on biomass harvests[a].

Biome	Aboveground NPP ($g\,m^{-2}\,yr^{-1}$)	Belowground NPP ($g\,m^{-2}\,yr^{-1}$)	Belowground NPP (% of total)	Total NPP ($g\,m^{-2}\,yr^{-1}$)
Tropical forests	1400	1100	0.44	2500
Temperate forests	950	600	0.39	1550
Boreal forests	230	150	0.39	380
Mediterranean shrublands	500	500	0.50	1000
Tropical savannas and grasslands	540	540	0.50	1080
Temperate grasslands	250	500	0.67	750
Deserts	150	100	0.40	250
Arctic tundra	80	100	0.57	180
Crops	530	80	0.13	610

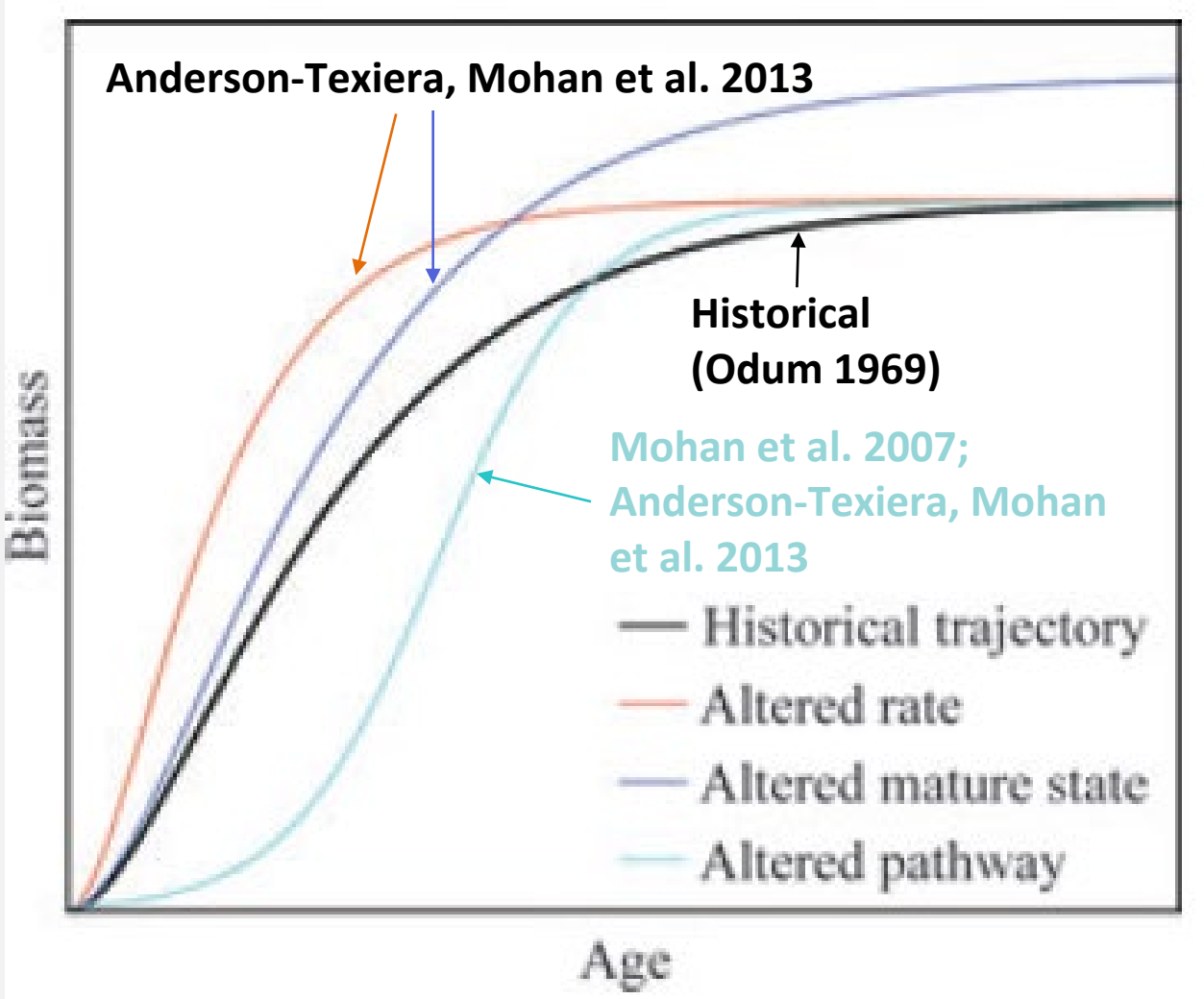
[a] NPP is expressed in units of dry mass. NPP estimated from harvests excludes NPP that is not available to harvest as a result of consumption by herbivores, root exudation, transfer to mycorrhizae, and volatile emissions.
Data from Saugier et al. (2001).

Forest C Storage Changes over Time

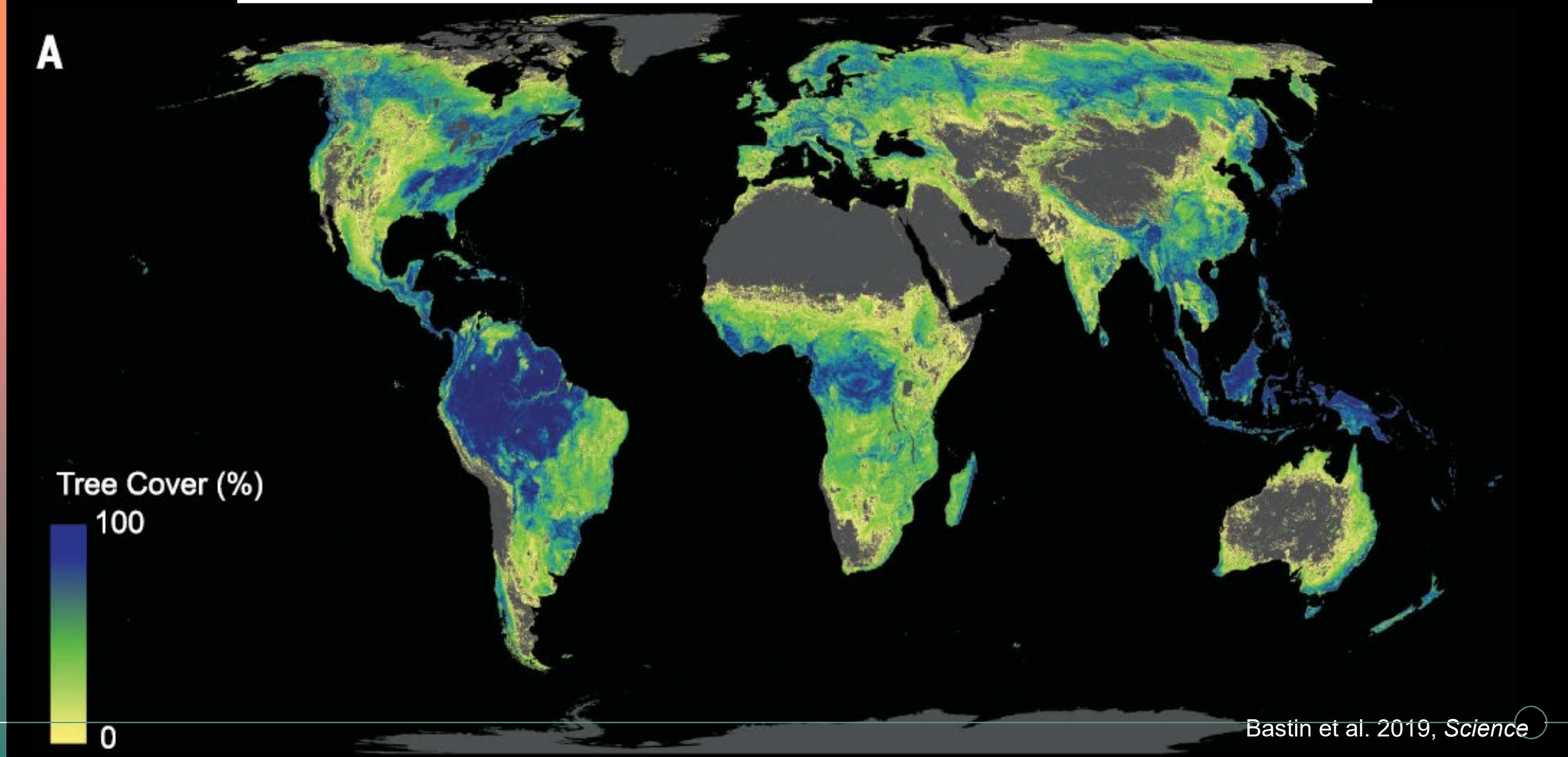
(Odum 1969, *Science*; Schlesinger & Bernhardt 2020 *Biogeochemistry*)



Global Change May Impact Forest Development & Carbon Dynamics



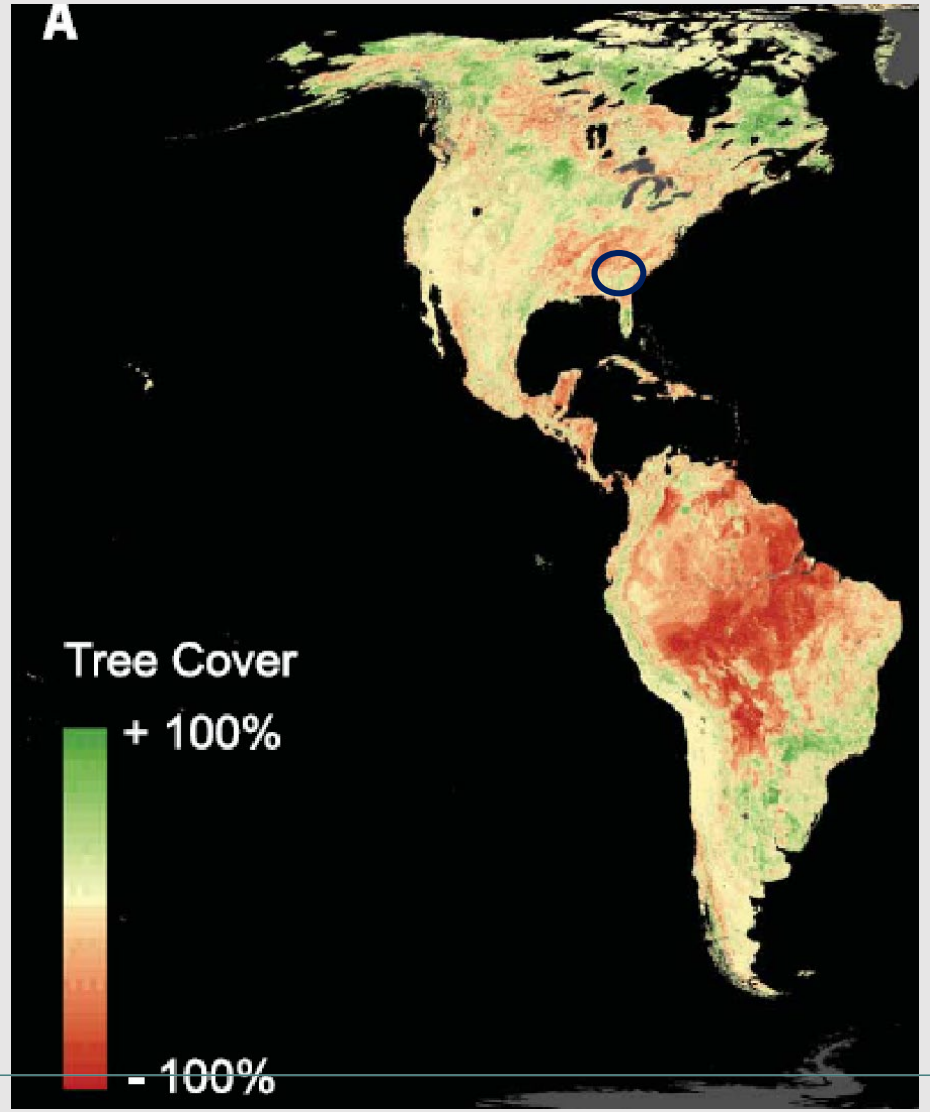
Global Potential Tree Cover
Representing an Area of 4.4 billion ha



Bastin et al. 2019, *Science*

Expected Loss of Tree Cover by 2050 under Most Dire Climate Change Scenario (RCP 8.5, or "Business as Usual")

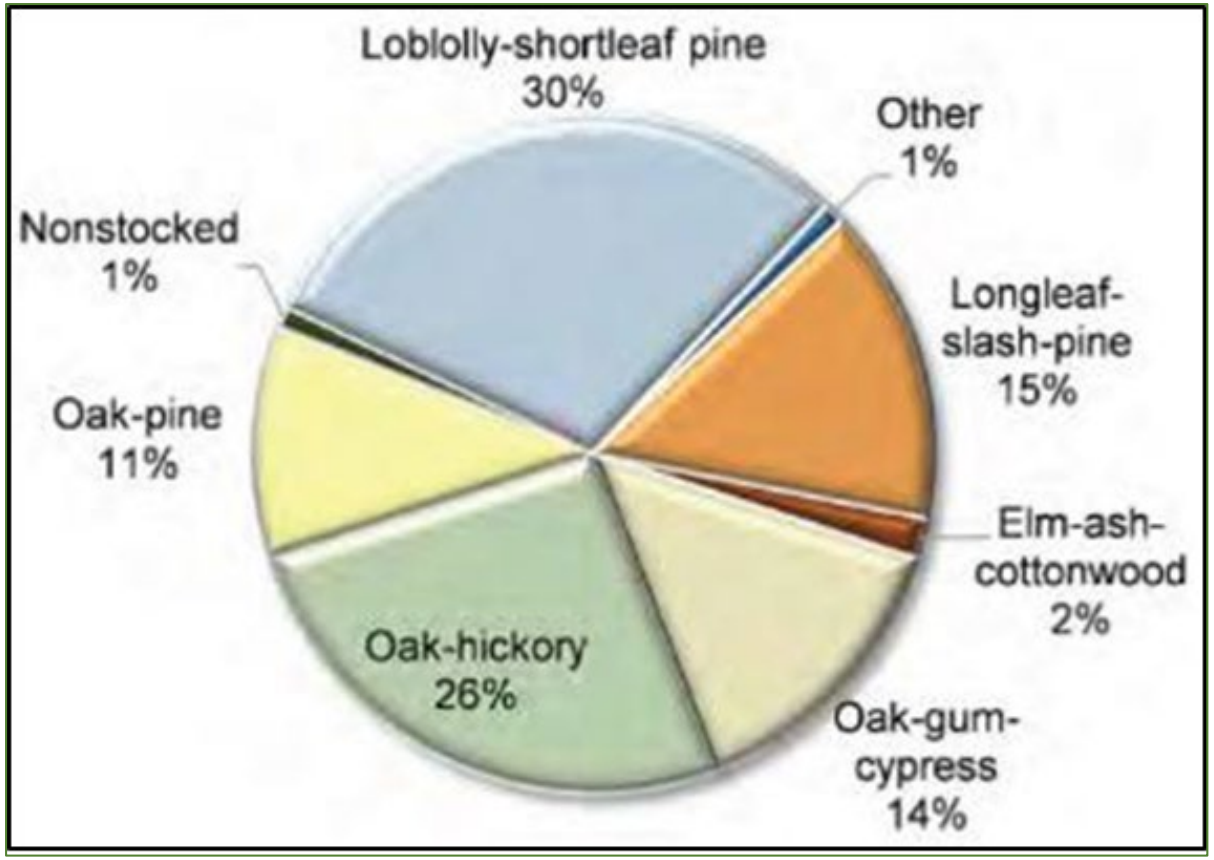
Bastin et al. 2019, *Science*



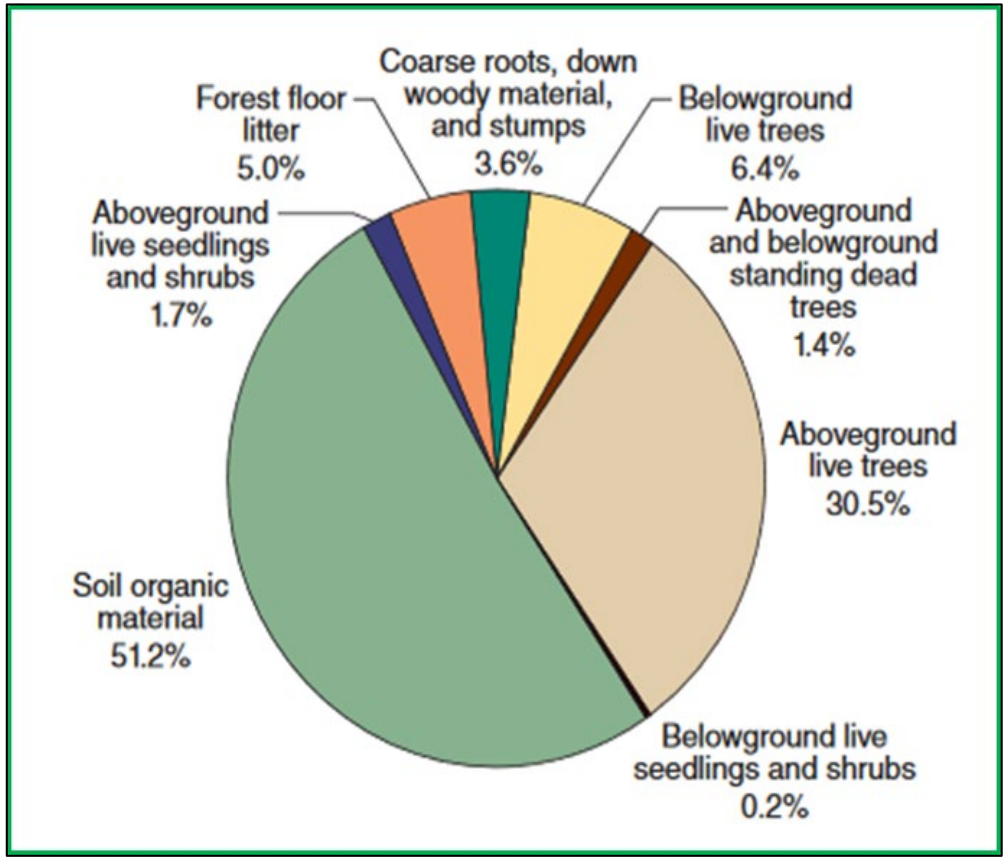
Georgia contains some of the only green (gains in Tree Cover) in the eastern U.S.

Globally, **forest protection, afforestation & restoration could sequester over 205 gigatons of carbon** (Ag and Urban areas excluded from analysis)

Forestlands of Georgia



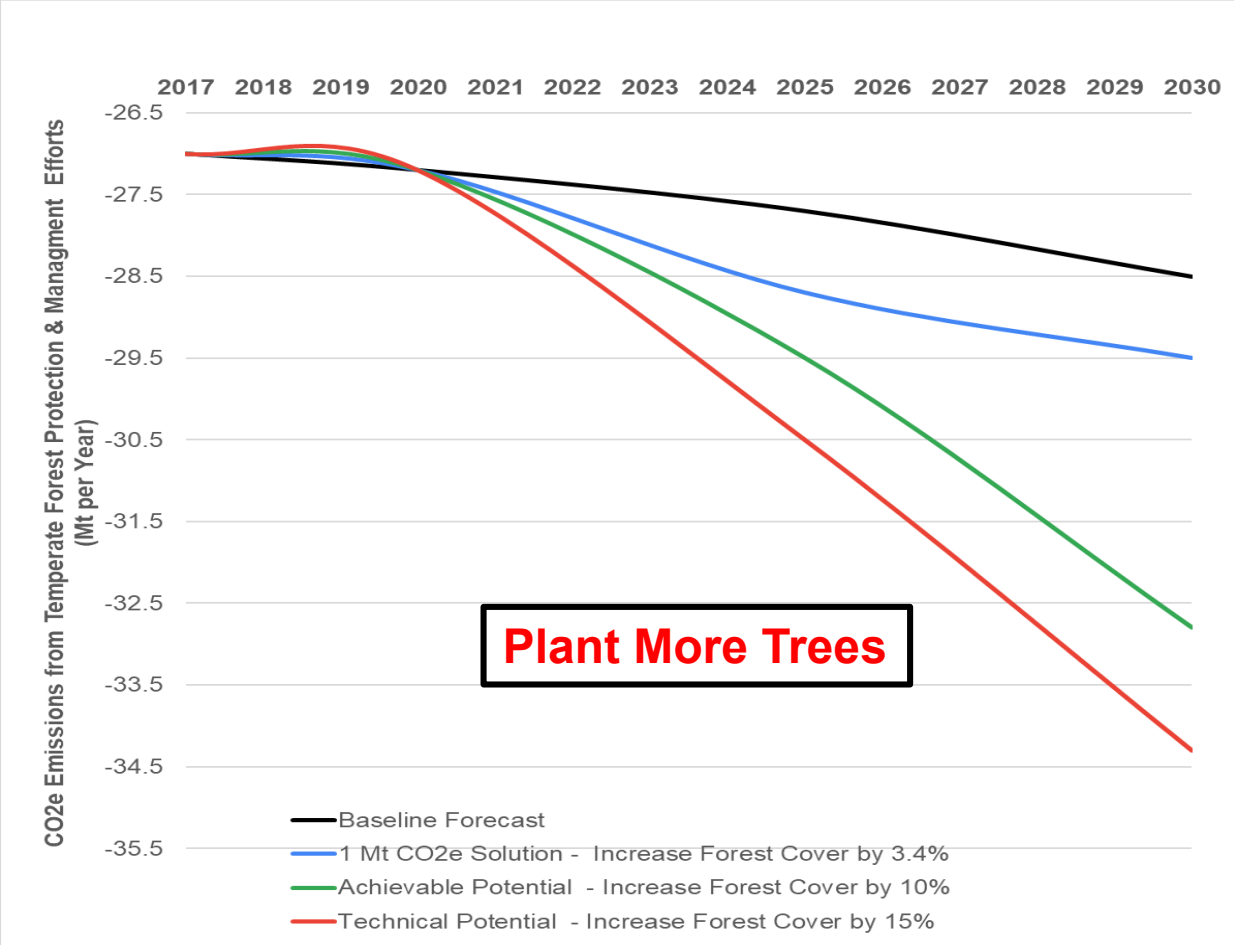
Georgia Forest Area: About 22 Million acres



Georgia Forest Carbon

USDA NRCS 2016, Georgia Forestry Commission 2017

Georgia Temperate Forest Annual CO_2e Storage (Trees + Soil)



Baseline = Currently Georgia's Temperate Forests take in about **27 $MtCO_2e$** each year in trees & soils. This amount will increase over time as trees continue to grow.

1 Mt CO_2e= Increasing forest cover by 3.4% would increase annual CO_2e storage by **1 Mt per year** by 2030. All planting times in this Solution are staggered with half around 2021 and half around 2025, and use half mixed hardwoods and half fast-growing pines.

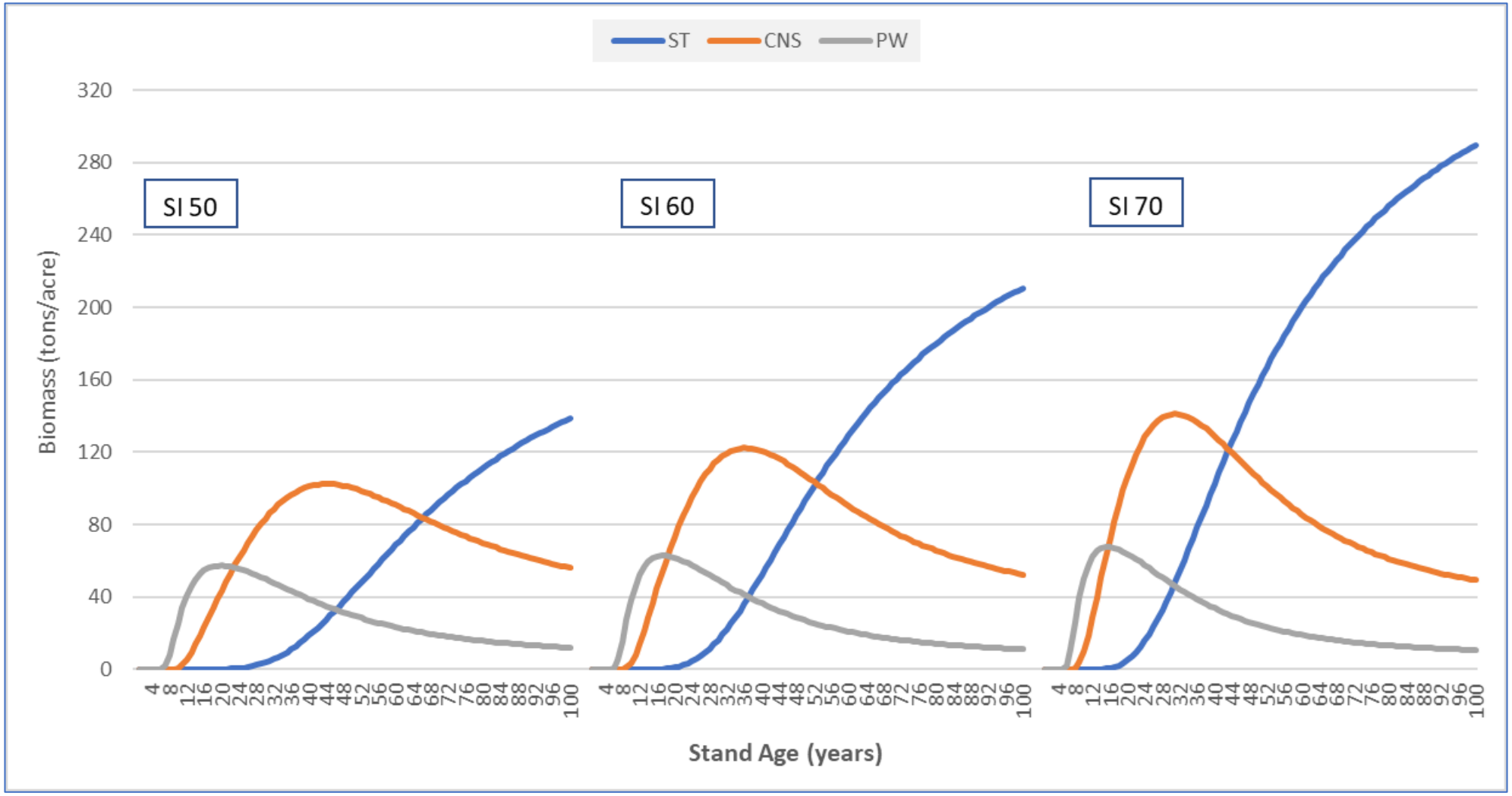
Achievable Potential = Increasing forest cover by 10% would increase annual CO_2e storage by **2.8 Mt** per year by 2030.

Technical Potential = Increasing current forest cover by 15% would increase annual CO_2e storage by an additional **4.3 $MtCO_2e$.**

1 $MtCO_2e$ solution in 2030 = Increasing forest cover by **3.4%** with mixed tree species would enhance annual CO_2e storage by 1 Mt by year 2030. Equivalent here to "Achievable Potential."

+ Jobs
+ Biodiversity
+ Low-cost, healthy recreational opportunities
+ Improved stream/river water quality
+ - Potential increased property values/costs

Temperate Forest Protection & Management –
Increasing Forest Cover with Planted Loblolly Pine Seedlings



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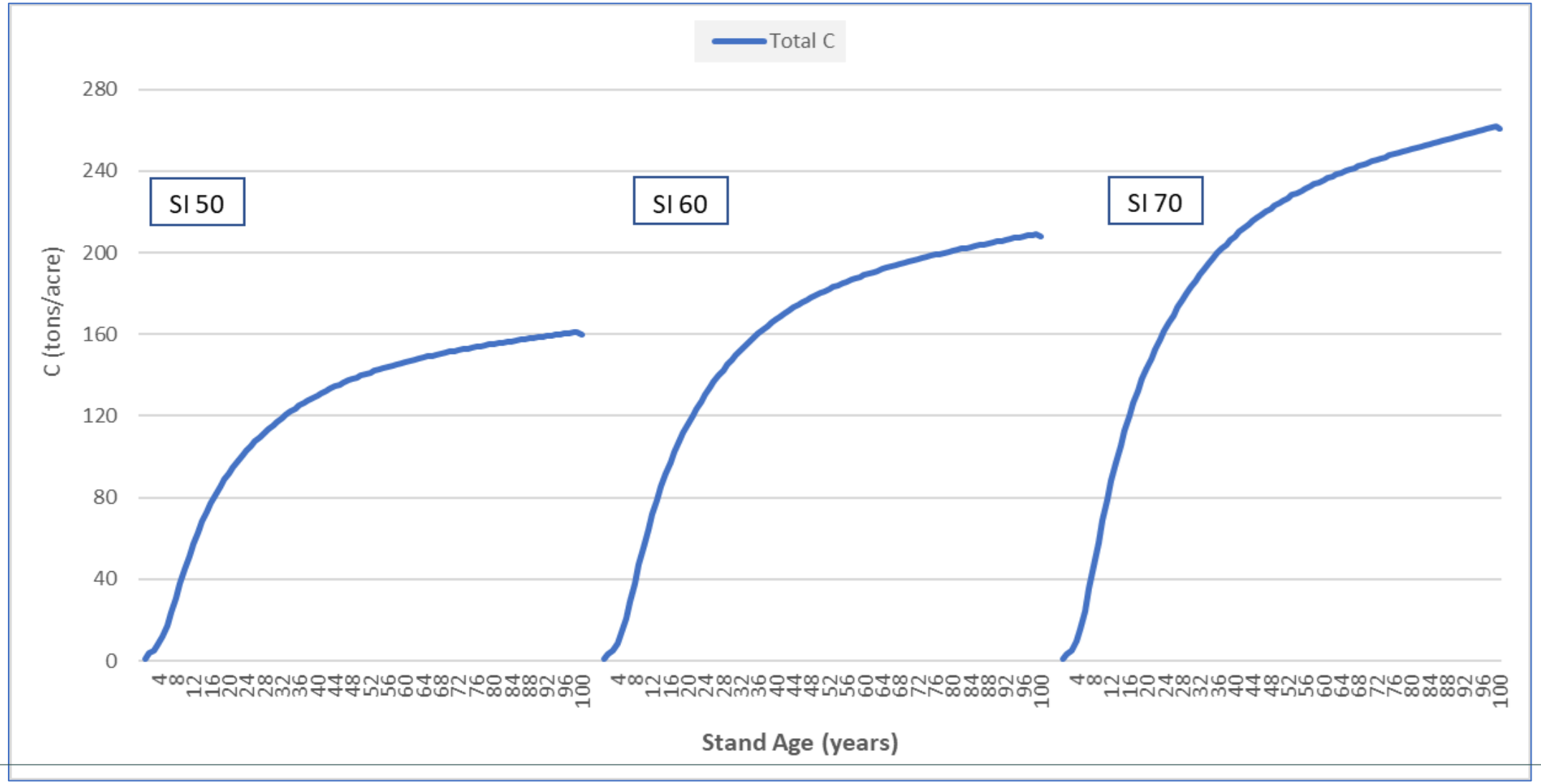

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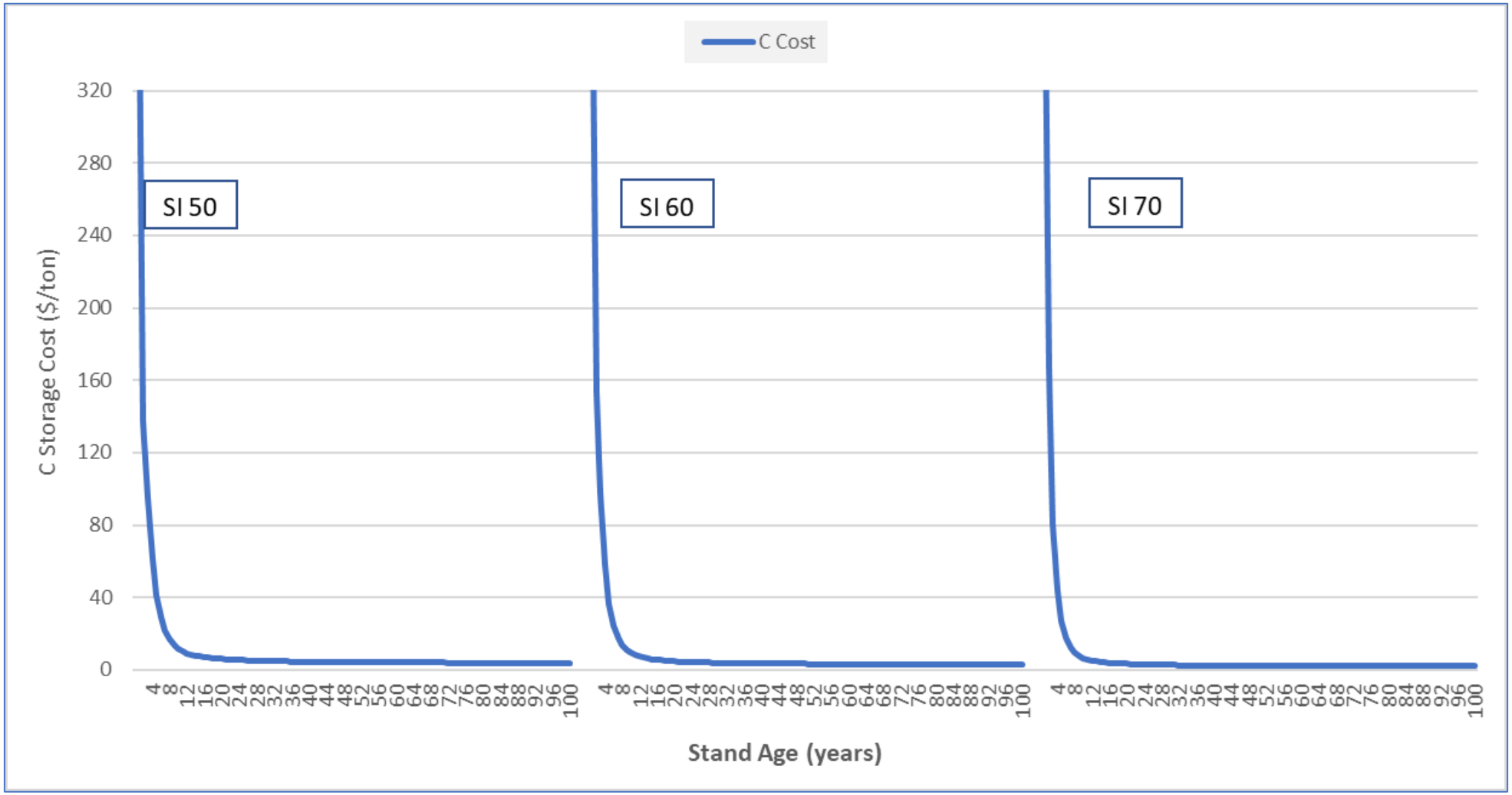

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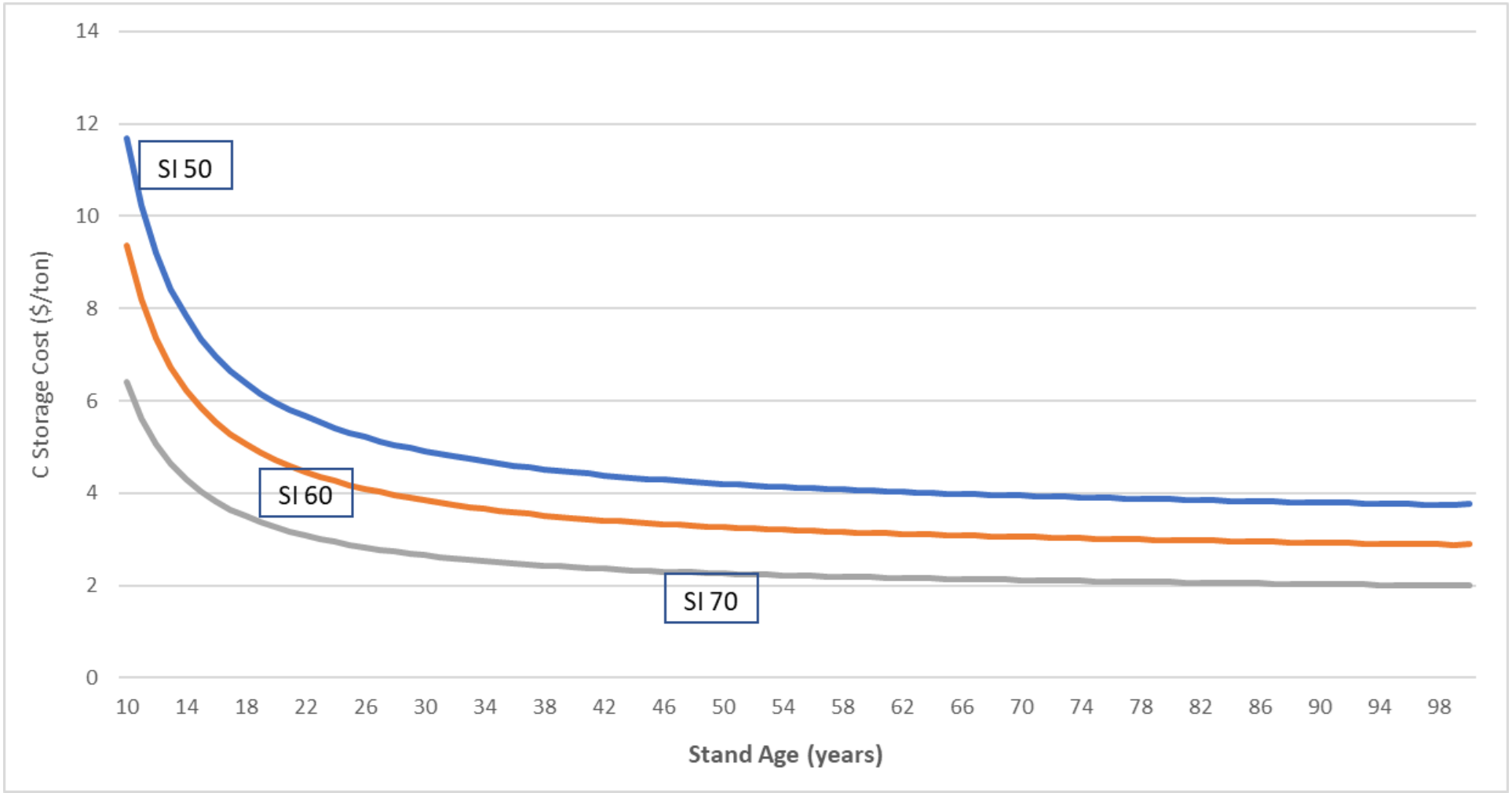


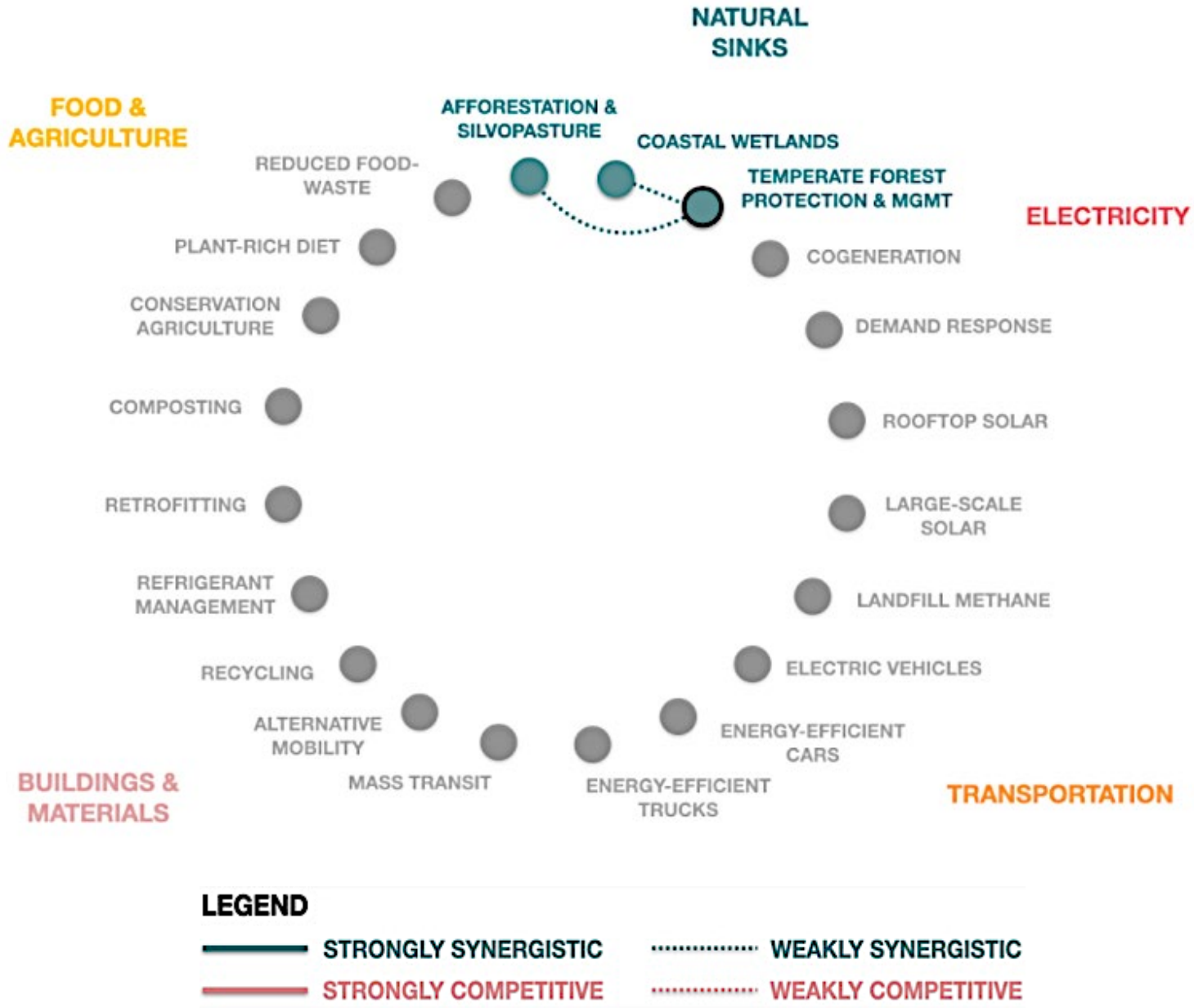
Programs Supporting Forest Protection & Management

- Southern Pine Beetle Cost Share Program (SPB)
- Invasive Plant Control Program (IPCP)
- Conservation Stewardship Program (CSP)
- Environmental Quality Incentives Program (EQIP)
- Healthy Forests Reserve Program (HFRP)
- Partners for Fish and Wildlife Program (PFW)
- Wildlife Incentives for Nongame and Game Species (Project WINGS)

Temperate Forests

Coastal Wetlands

Afforestation & Silvopasture



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