

Integrating Climate Smart Principles into Action

USDA Climate Policy and the Role of Modeling and Quantification

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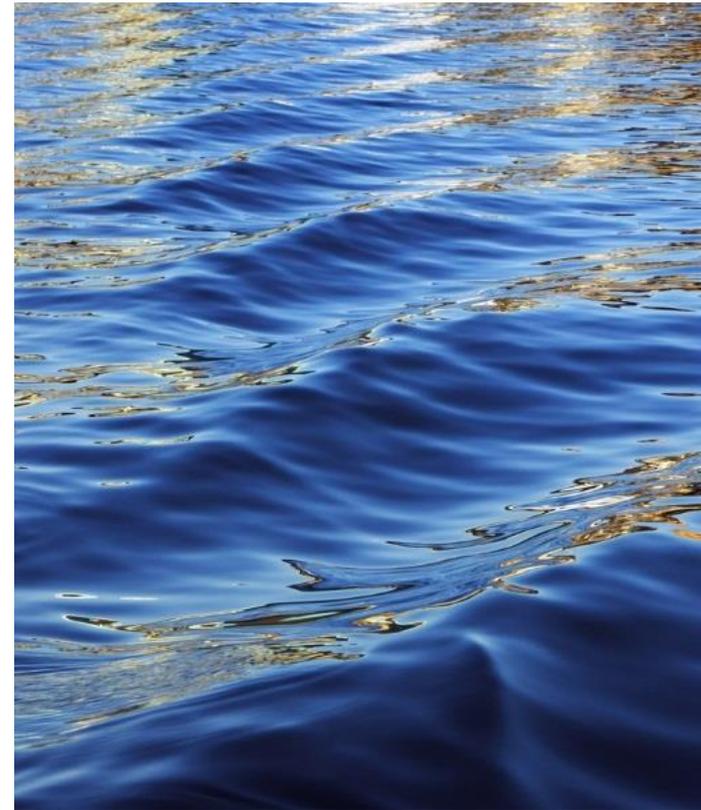


Table 3--Area of timberland in 1952 and 1987, with projected area in 1962, 1970, 1977, and 2040.

Ownership class and region

Ownership class
Public
Forest industry
Farmer and other private owners
Total, all classes

Region
North
South
Rocky Mountains'
Pacific Coast²

Total, all regions

Data for 1952 and 1962
Totals may not sum due to rounding

1 Includes Great Plains
2 Includes Alaska and Hawaii

United States
Department of
Agriculture

Forest Service

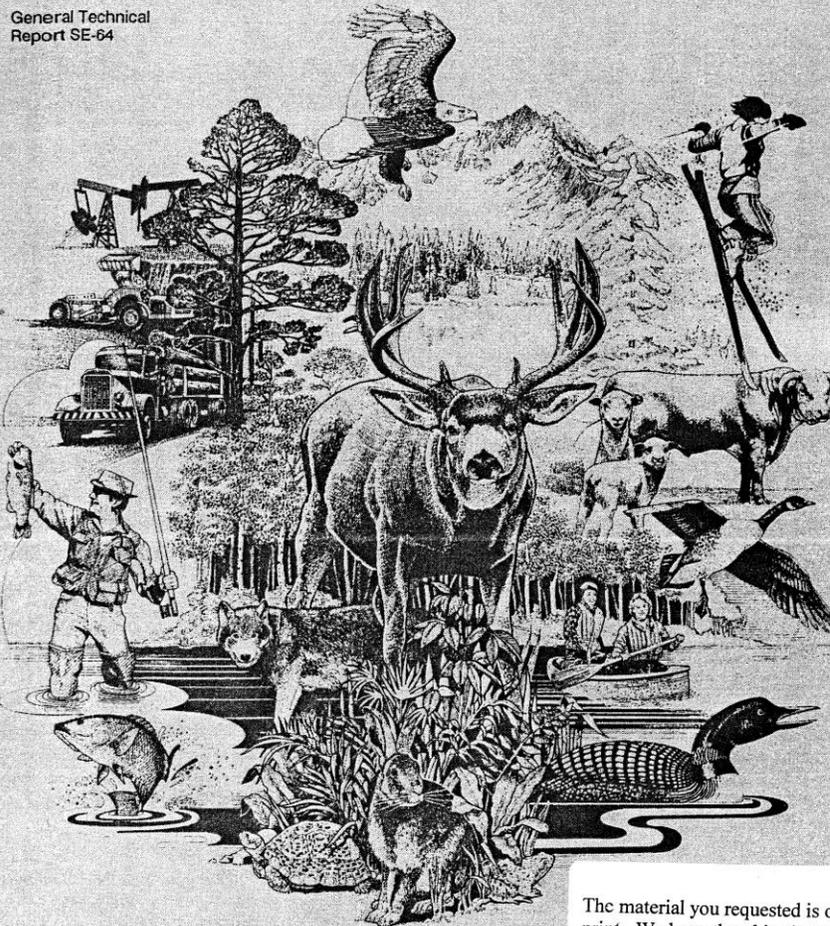


Southeastern Forest
Experiment Station

General Technical
Report SE-64

Changes in Area of Timberland in the United States, 1952-2040, By Ownership, Forest Type, Region, and State

Ralph J. Allg, William G. Hohenstein,
Brian C. Murray, and Robert G. Haight

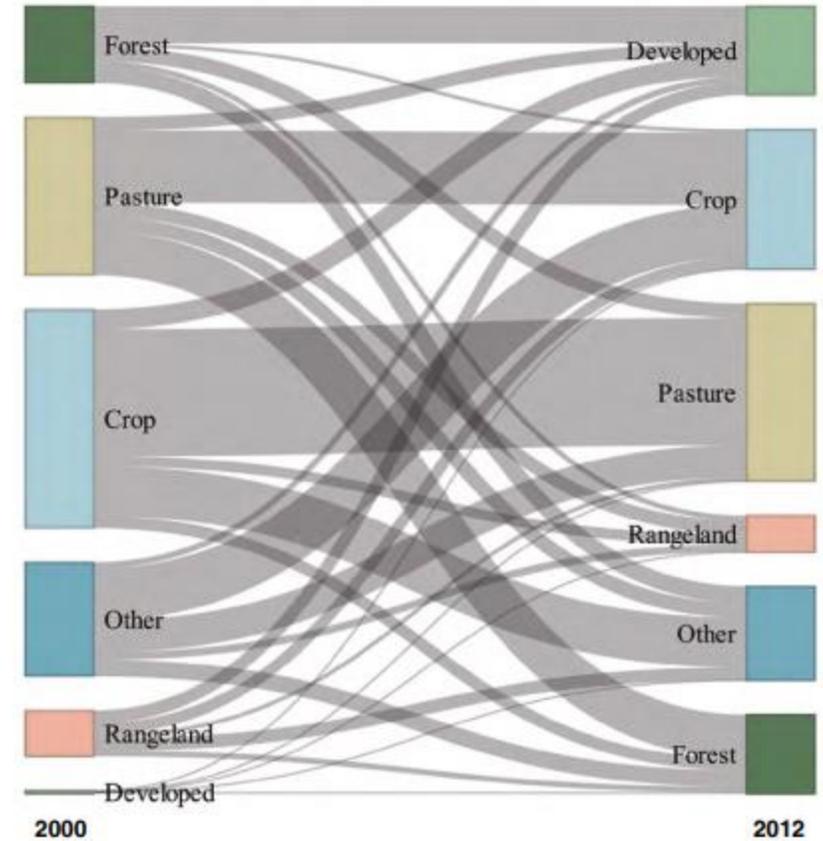
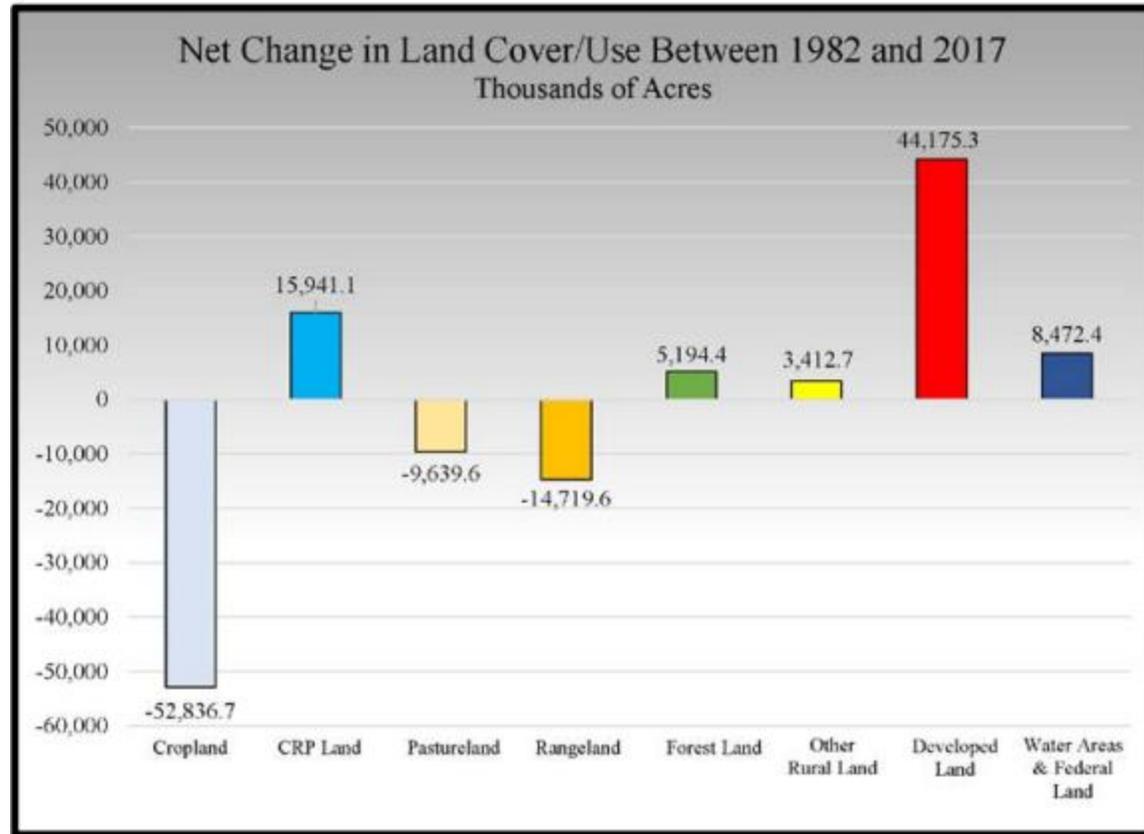


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1962, 1970, 1977.

Projections	Year		
	2020	2030	2040
Public	134	134	134
Forest industry	71	71	71
Farmer and other private owners	263	260	258
Total, all classes	469	465	463
North	152	151	150
South	189	187	187
Rocky Mountains'	60	59	59
Pacific Coast ²	69	68	67
Total, all regions	469	465	463

2017 NRI and 2020 RPA Assessment



Source: USDA 2015.

U.S. Economy-Wide Climate Change Goals

- The Biden-Harris Administration has called for a whole-of-government approach to achieve **net-zero greenhouse gas emissions economy-wide by 2050**, which scientists say is required to avoid the worst impacts of climate change.
- In its Nationally Determined Contribution (NDC) to the UNFCCC in April 2021, the U.S. committed to an **economy-wide target of reducing its net greenhouse gas emissions by 50-52 percent below 2005 levels in 2030**.
- Achieving these climate goals, particularly the 2030 benchmark, will take ambitious action in the next 8 years. This will require broad engagement and action across the Department.

Expanding Investment in Climate Smart Agriculture

Existing Farm Bill Title II Conservation and Title IX Energy programs

- Integrating GHG benefits into programs
- Tracking progress through reporting

Expansion of Farm Bill Title II through 2022 IRA

- 19+ Billion in funding for conservation
- Additional funding for on-farm energy projects
- Targeting GHG benefits
- Focus on MMRV

Partnerships for Climate Smart Commodities

- Leverage consumer demand
- Private Sector supply chains
- Returning value to producers
- Lower CI Scores

Facilitate Private Markets

- Scope III emissions
- Climate smart biofuels, RNG, power
- Growing Climate Solutions Act
- SUSTAINS
- Farm Bill Section 2709

General public
investment

Targeted public
investment

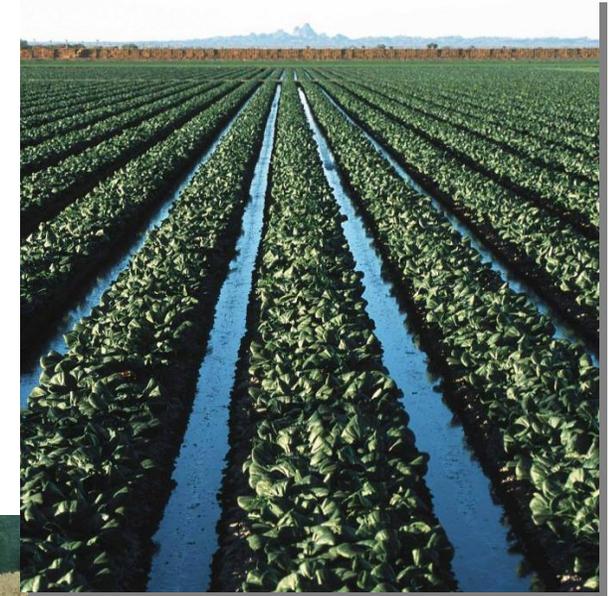
Joint public/private
investment

Private
investment

Achieving these commitments will require a transformation within cropping systems

Croplands

- 40-50 million new acres of conservation tillage and reduced field pass intensity
- Doubling the adoption of cover cropping, double cropping, and reducing dry land fallow
- Enhanced efficiency fertilizers, nitrogen inhibitors, and variable rate application on 100 million acres
- 4+ million acres of new buffers, wind breaks, and grassland conservation
- Reducing the frequency and duration of flooding of rice paddies on 2 million acres



Achieving these commitments will require a transformation within animal agriculture

Animal Agriculture

- 400+ new Anaerobic digesters
- Thousands covers on anaerobic lagoons
- Millions of acres of improved and rotational grazing
- Commercial availability of improved feed management and effective feed additives



Achieving these commitments will require a transformation within the Forest Sector

Public and Private Forests

- Reducing fuel loads and improving forest health
- Tree planting/afforestation on marginal lands
- Improving/intensifying forest management



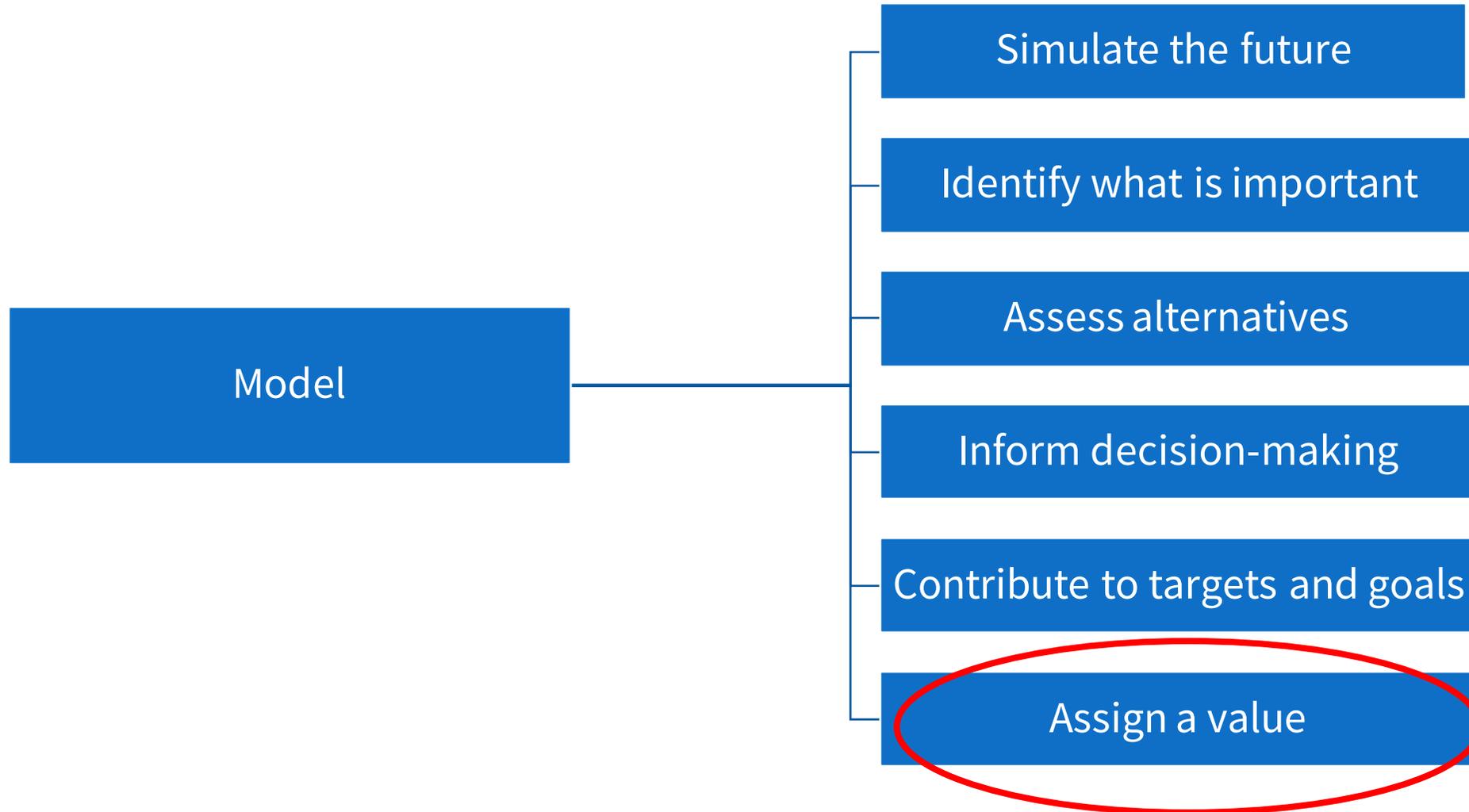
Achieving these commitments will require an expansion of farm and forest based renewable energy

Renewable Fuels, Power, and Products

- Reducing the CI scores of biofuel feedstock production
- Domestically produced sustainable aviation fuel
- On-farm wind and solar
- Expanding markets for biobased products
- Anaerobic digesters for RNG
- Utilizing wood from forest health treatments



Uses of Models in Climate Planning and Policy Development



What are we looking for in a model (or models)?

Transparent

- Structured in a way that allows for an understanding of parameters
- Documentation of strengths and weaknesses

Current

- Does the model include the latest technologies and practices?
- Does it account for policies and commitments that are in place?

Calibrated

- Is the model capable of reproducing current conditions?
- Is the responsiveness consistent with data and past trends?

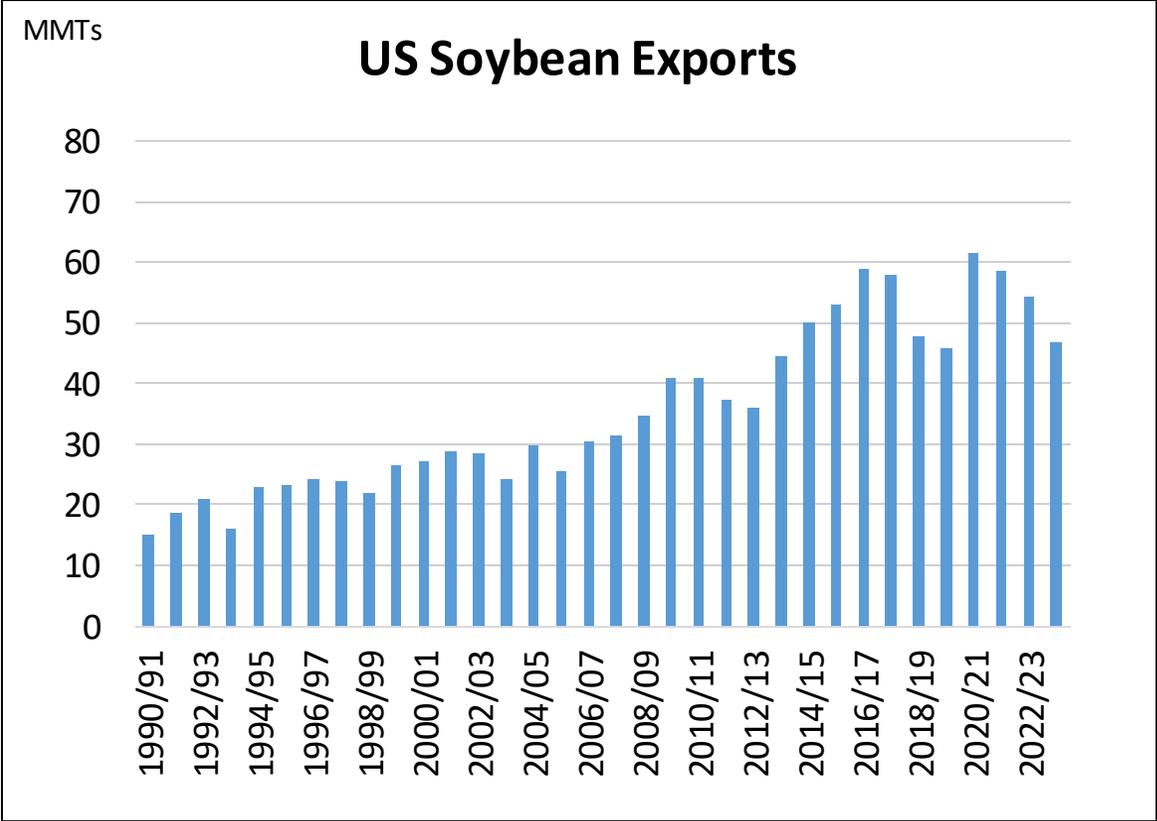
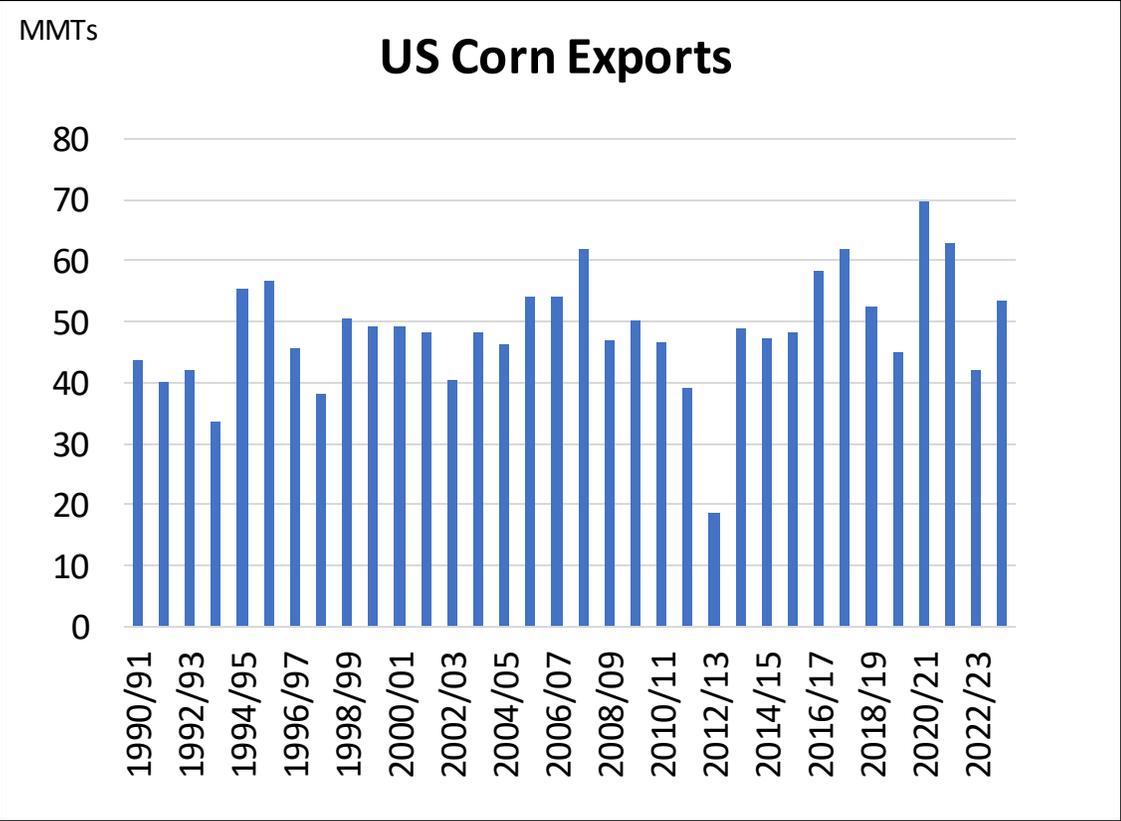
Aligned

- Up to date and in alignment with recent literature
- Can it distinguish technical and policy parameters?
- Treatment of “significant indirect effects”?

Examples of model application

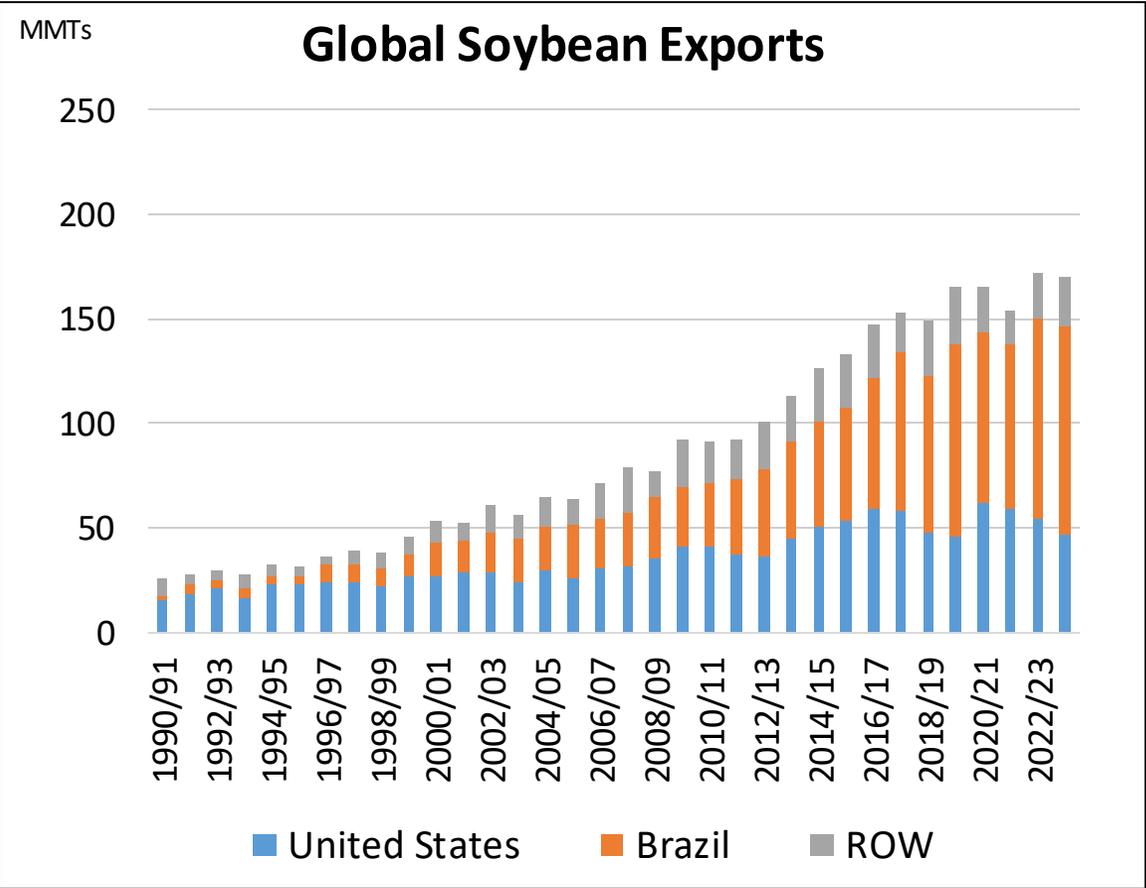
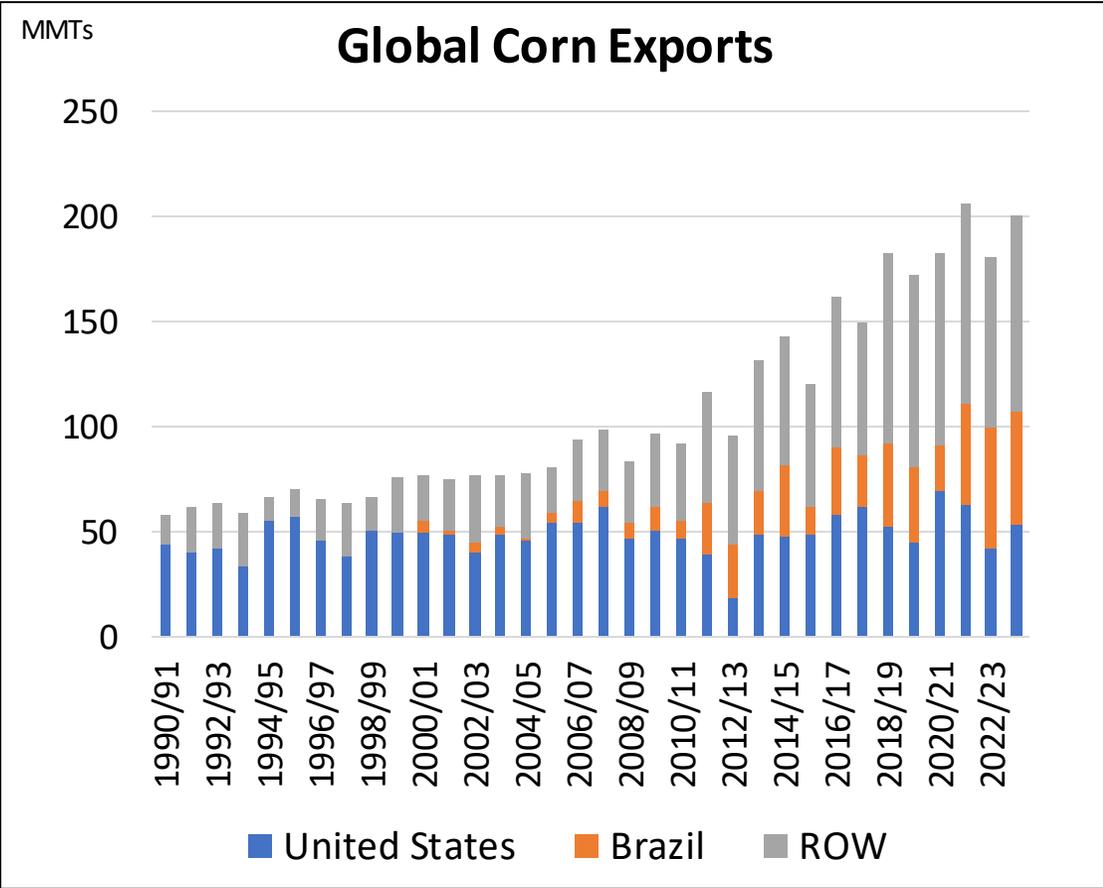
- **Biofuel ILUC scores** – Assign a score
- **Soil carbon storage on croplands** – Evaluate potential, address permanence and durability
- **Digester RNG** -- Account for significant indirect benefits
- **Wood-fired electricity** - Understand market implications on forest investment and retention
- **Tree planting/afforestation** – Where? How much? Tradeoffs?

US Corn and Soy exports have been stable / increasing...



Source: USDA OCE

...US share of global exports has been steadily declining



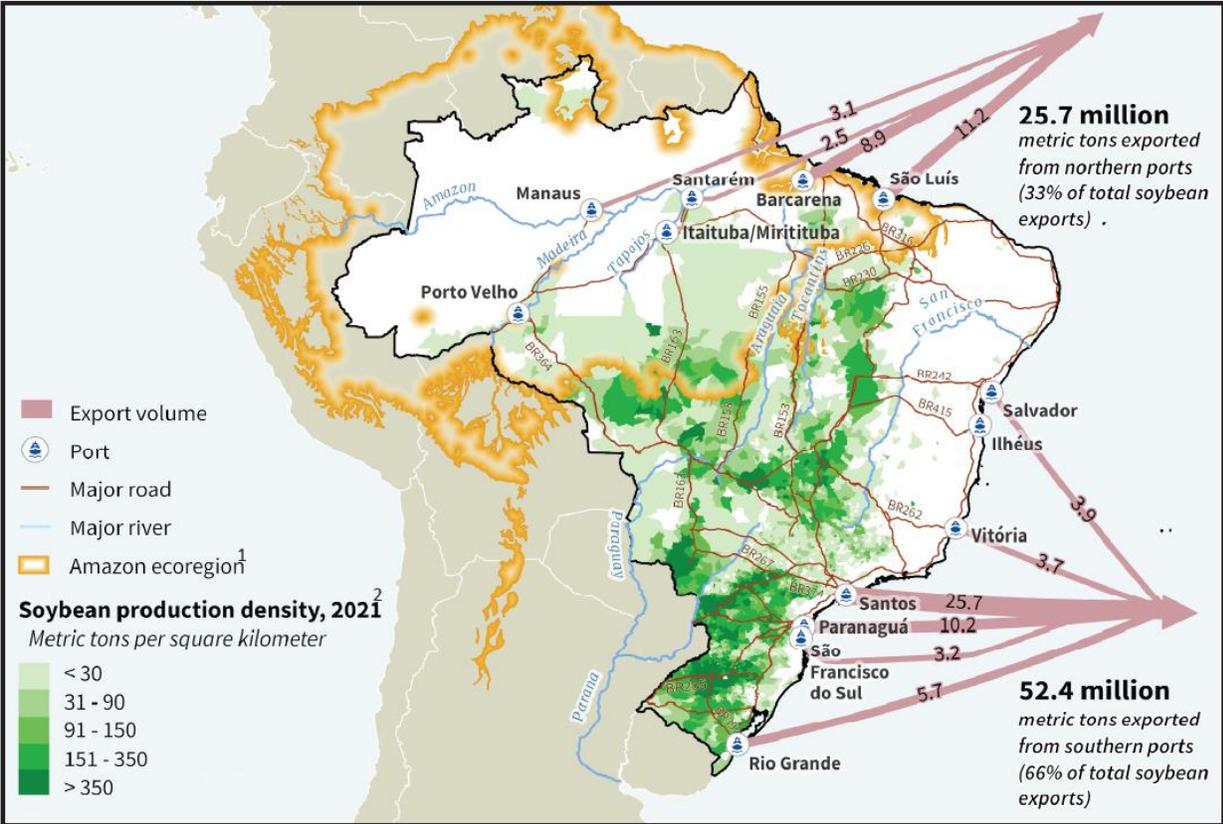
Source: USDA OCE

Expanding Area and Port improvements in Northern Brazil

Brazil soybean exports: 2013

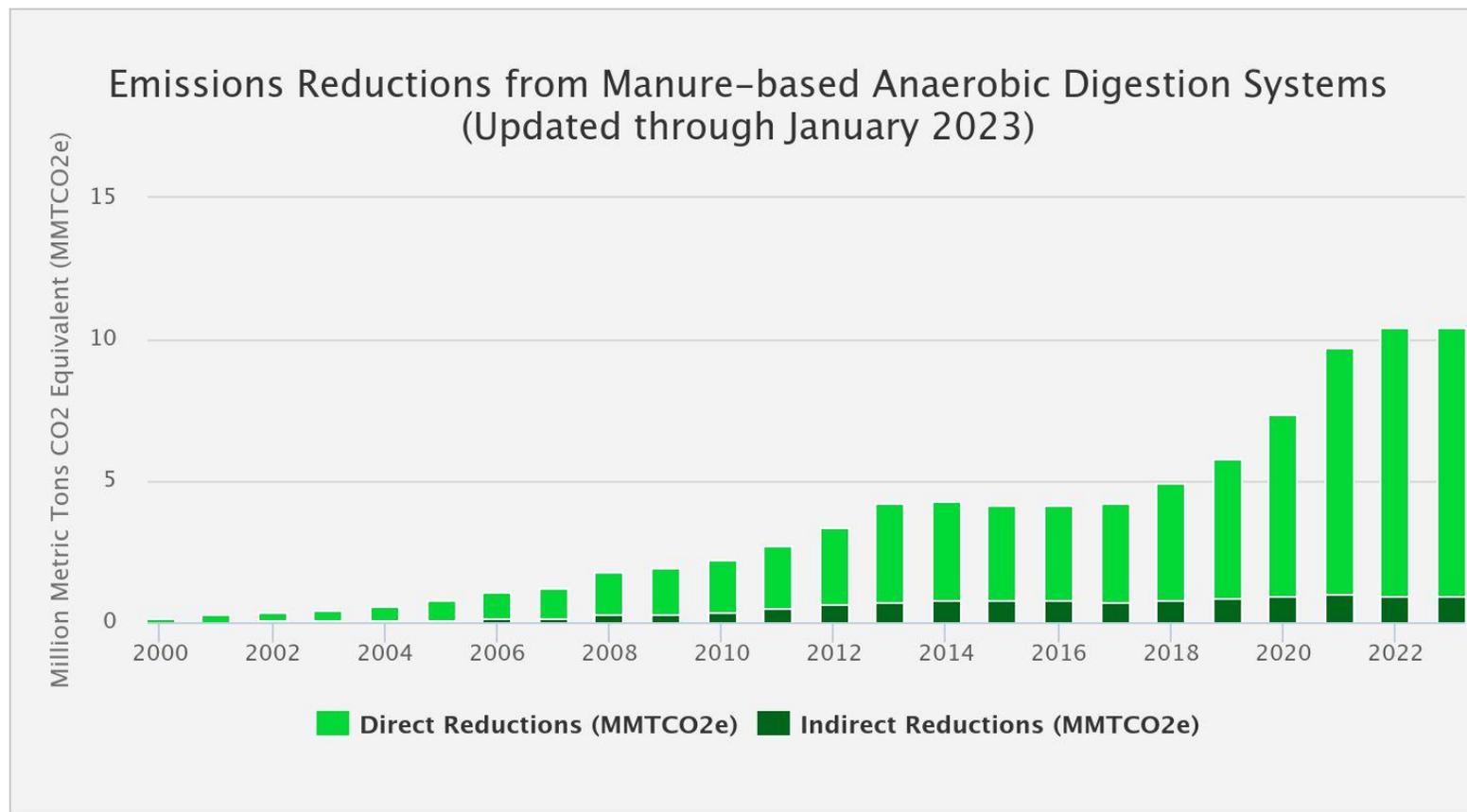


Brazil soybean exports: 2022

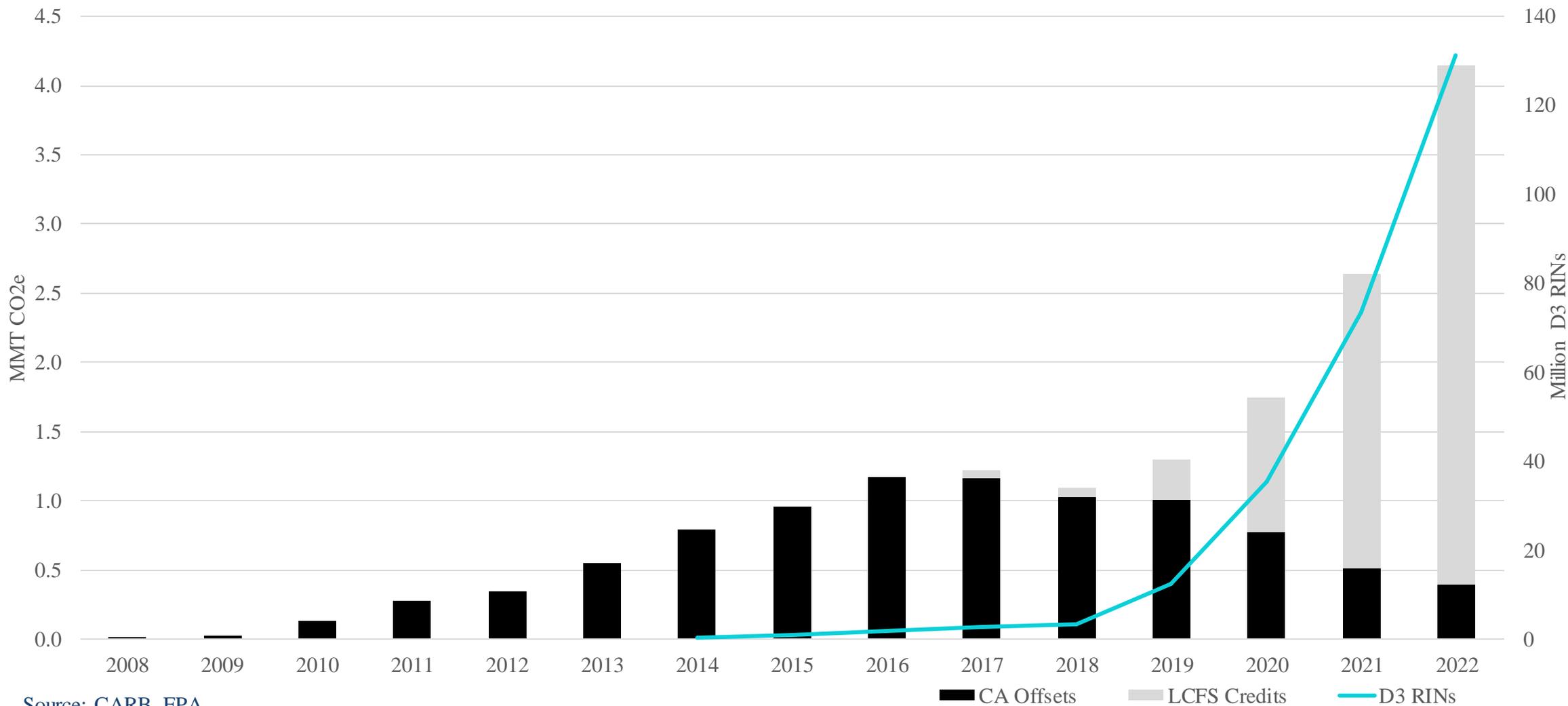


Source: USDA AMS (<https://www.ams.usda.gov/sites/default/files/media/BrazilOverview2022.pdf>)

Renewable Natural Gas

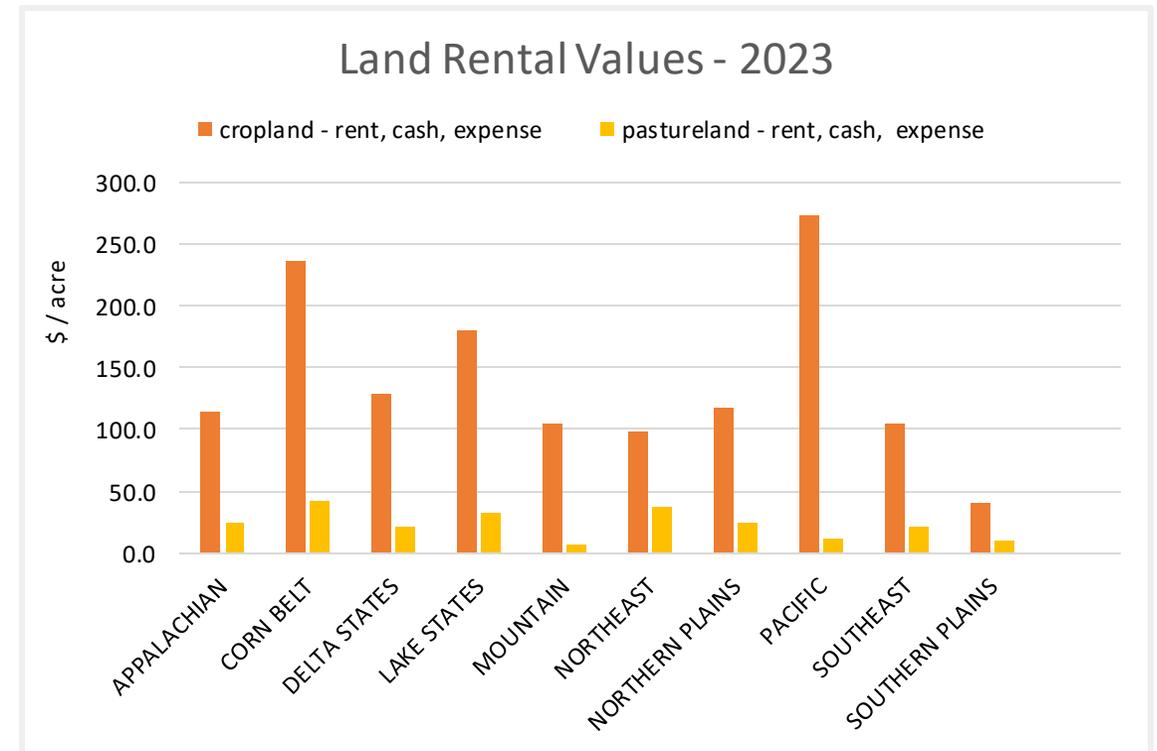
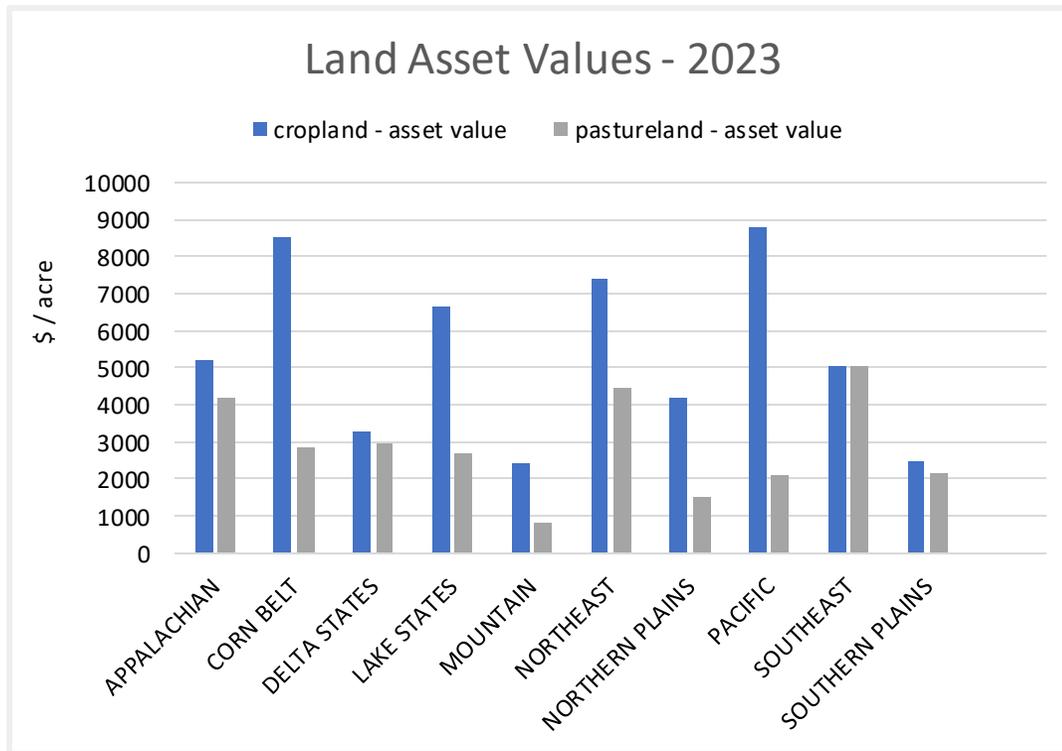


Example: Digesters and Environmental Market Credits



Source: CARB, EPA.

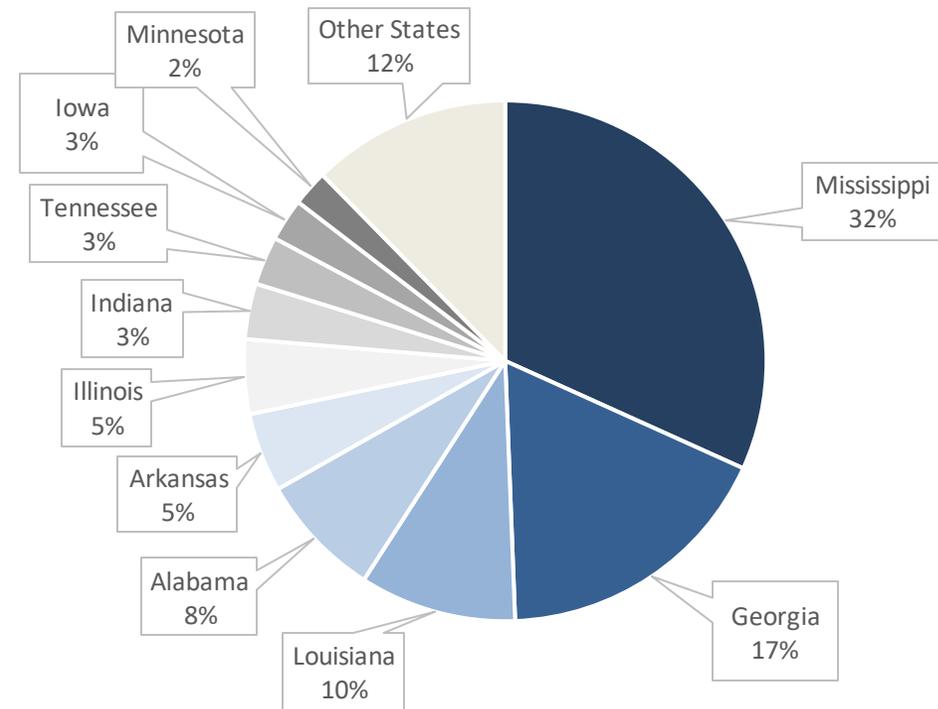
Regional land values can indicate where tree planting is more or less likely



Conservation Reserve Program (CRP) funds afforestation through a variety of practices.

- Higher acreage of woodlots/whole field enrollments in the Southeast

Acres enrolled in CRP Woodlot practices
Top 10 States

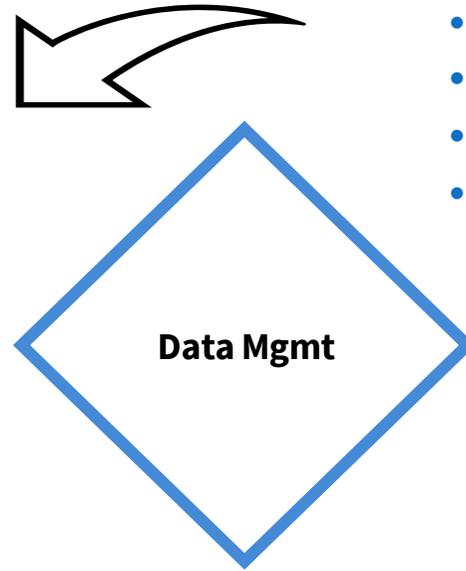


IRA Greenhouse Gas Measurement and Monitoring Investments

- Establish and advance a Soil Carbon Monitoring and Research Network with a perennial biomass component
- Establish and advance a Greenhouse Gas Research Network
- Expand data management, infrastructure, and capacity
- Improve models and tools for assessing outcomes at operational, state, regional, and national scales
- Improve NRCS conservation practice standards and implementation data to reflect GHG mitigation opportunities
- Improve temporal and spatial coverage of national conservation activity data
- Advance Greenhouse Gas Inventory and Assessment Program of USDA

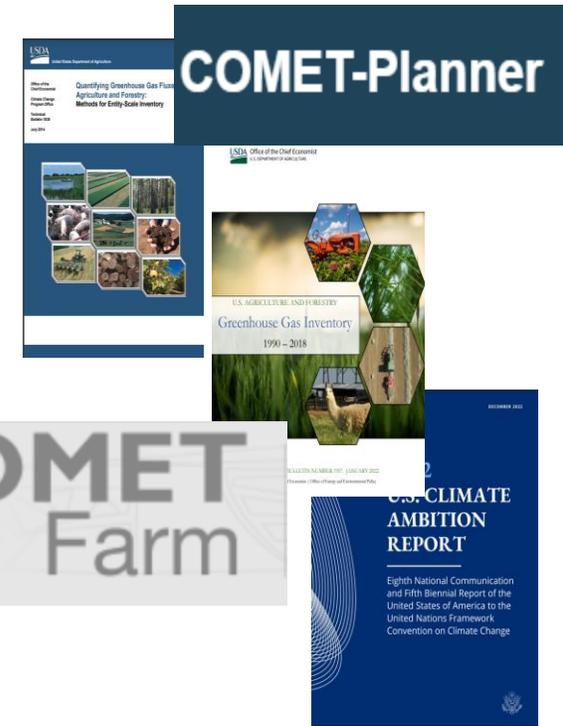
Activity Data:

- Improved and expanded conservation surveys
- Use of geospatial data



Models/Tools/Reporting:

- Tools/Models
- Methods Report
- Reports & Analysis
- Conservation Practice Standards



USDA MMRV Investments

Science and Monitoring:

- Soil carbon monitoring & research
- Field campaigns for N2O and CH4



Concluding thoughts...

